ENGINEERING NEWS-RECORD

A McGRAW HILL PUBLICATION

This
"Largest of its kind"
AIR CONDITIONING SYSTEM
checks corrosion with

BYERS WROUGHT IRON PIPE

Said to be the largest job of its kind, and one of the largest office building installations in the country, the air conditioning in this Oklahoma City building is safeguarded against corrosion by Byers Wrought Iron pipe.

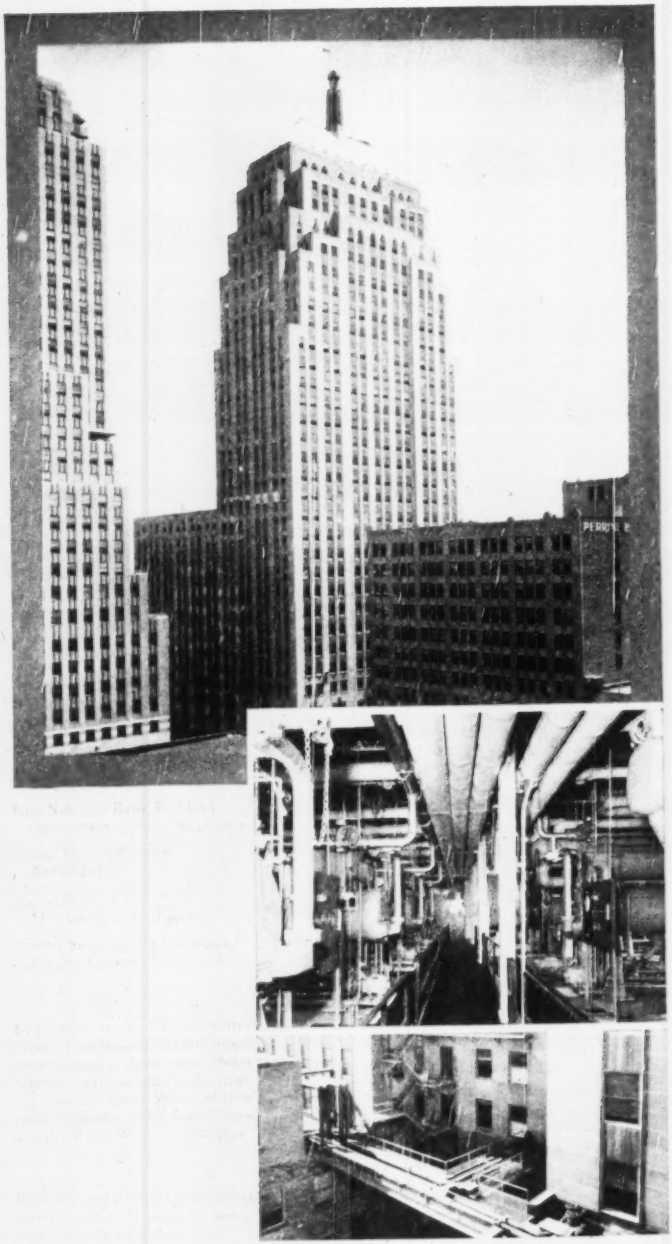
Chilled water lines, recirculating water lines, and condensed water lines all utilize this time-proven material. This 1350-ton absorption-type refrigeration equipment is located in a pent-house on the 14th floor roof of one of the wings. Chilled water lines are carried on bridges across areaways. Design contemplates the use of 45° F. water.

The Southwest has been a leader in the use of air conditioning equipment, and it is interesting to note how widely engineers have forestalled corrosive attack by using Byers Wrought Iron. Since the cost of even minor repairs is bound to be high, this use of wrought iron is a definite economy measure.

Wrought iron owes its ability to combat corrosion to its unusual composition and structure. Tiny fibers of glass like silicate slag, threaded through the body of high-purity iron, act like a series of baffles, to halt and disperse corrosive attack. The fibers also anchor the initial protective scale, which shields the underlying metal. In cases where galvanizing is used, the naturally rougher surface of wrought iron takes and retains a heavier coating of spelter.

With air conditioning becoming a "must" in new office building construction in many sections, you may be interested in the information contained in our bulletin WROUGHT IRON FOR REFRIGERATION AND AIR CONDITIONING INSTALLATIONS. We will be glad to send you a copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.



CORROSION COSTS YOU MORE THAN WROUGHT IRON

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

Profit-minded?

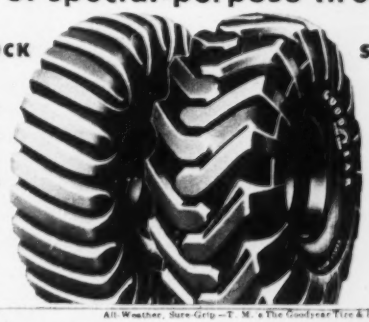
Here's your tire!

YOUR equipment *works faster—moves more yards—earns more money for you*—on Goodyear's huge, husky All-Weather tire. Designed and built for free-rolling wheels where maximum flotation is a major requirement, this giant All-Weather rolls big loads faster, helps lick tight schedules and high operating costs. That's why it's *first choice* with experienced, profit-conscious operators!

Goodyear's got the winning team of special-purpose tires

HARD ROCK LUG

Super-tough champ for all types of rock work



SURE-GRIP

Tops for drive-wheel traction on graders and pans

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

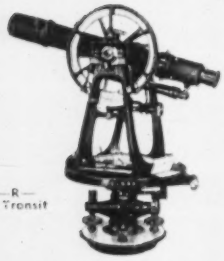
When you buy a transit you expect:

1. Absolute concentricity of centers
2. Graduations of unsurpassed accuracy on Sterling Silver
3. Permanency of line of collimation
4. Consistent performance under all climatic conditions
5. Optics of highest precision

when you buy a

· BERGER ·

it's all there!



No. 61/4—R—
BUZKA Tronsit

Work fast and accurately with a Berger instrument—get more work done in a day. Errors are eliminated, costly manpower saved. Go for years *if not for a lifetime without "laid up" instruments and repair bills.* Get unparalleled economy, not only in the long run, but in everyday use.

Leadership **BERGER** *Since 1871*

THIS COUPON BRINGS DATA

C. L. BERGER & SONS, INC. 83150
37 WILLIAMS ST.
ROXBURY, BOSTON 19, MASS.

Send Literature on TRANSITS LEVELS
ALIDADES COLLIMATORS

Name
Title
Company
Address
City Zone State

ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 145 AUGUST 31, 1950 No. 9

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

First Continuous Prestressed Bridge 30
Natural Gas—Its Boom is Big Business 33
Speed Puts Concreting Ahead at Clark Hill Dam 37
Tidal Knowledge Evaluated 39
Lessons Learned from a Sewage Project ..... M. H. Klegerman 41
Steel Panels for Desert Bridge Deck 44
Perspective—Letter from Kansas City 96

DEPARTMENTS

Construction Week	17	Municipal Affairs	52
Construction Trends	19	Education and Research	54
Editorials	21	Election and Activities	55
News of the Week	25	Men and Jobs	56
Reader Comment	47	Obituaries	57
Field and Office	48	Unit Prices	59
Developments Abroad	51	Construction Reports	62
New Products	84		

Number of copies of this issue printed: 45,077

Managing Editor—Emerson E. Haynes, Jr.
Associate Editors—New York: A. T. Boughton (senior associate), J. C. Bumstead, R. H. Dodds, F. S. Merritt; Chicago: J. E. Clark; San Francisco: N. A. Bowers; L. L. Wise; Washington: V. R. Smith.
Assistant Editors—New York: Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor.
Staff Assistants—Ethel Leon; *Buildings*: R. P. Mumyes; *Production*: Louise Barbet, Ruth McCarthy, Madeleine Smith; *Editorial*.
Business News—Edgar D. Gray; *Manager*: E. M. Hilbert; Jane Lucas; J. A. Mahoney; Frederick Lee Moore, Jr.; M. W. Roessler; M. Weitzel.
Contributing Editor—Edward J. Cleary.
Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 51 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. Correspondents: Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 30 other cities.

Robert F. Beach
Publisher

August 31, 1950 ENGINEERING NEWS-RECORD Vol. 145—No. 9
Publication Office 99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices 330 W. 42nd St., New York 18, N. Y.

Copyright 1950 by McGraw-Hill Publishing Co. Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co. Inc. JAMES H. McGRAW (1860-1948), Founder. CURTIS W. McGRAW, President and Treasurer; WILFRED I. DUTHIE, Executive Vice President; JOSEPH A. GERARDI, Vice President and Treasurer; JOHN J. COOKE, Secretary; PAUL MONTGOMERY, Senior Vice President, Publications Division; RALPH B. SMITH, Executive Vice President; NELSON BOND, Vice President and Director of Advertising; J. E. BLACKBURN, Jr., Vice President and Director of Circulation. Cable address: McGraw-Hill N.Y.C., N.Y.

Subscriptions [illegible] U.S. and possessions $6; $9.50 Pan American; $10; $15; $20 Canada; $5; $7.50; $8; $12 All others $24; $36.

Address all subscriptions and correspondence to Director of Circulation. Price 25 cents each. Please include address and complete identification on all subscription orders.

Entered as Second Class matter October 26, 1917, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

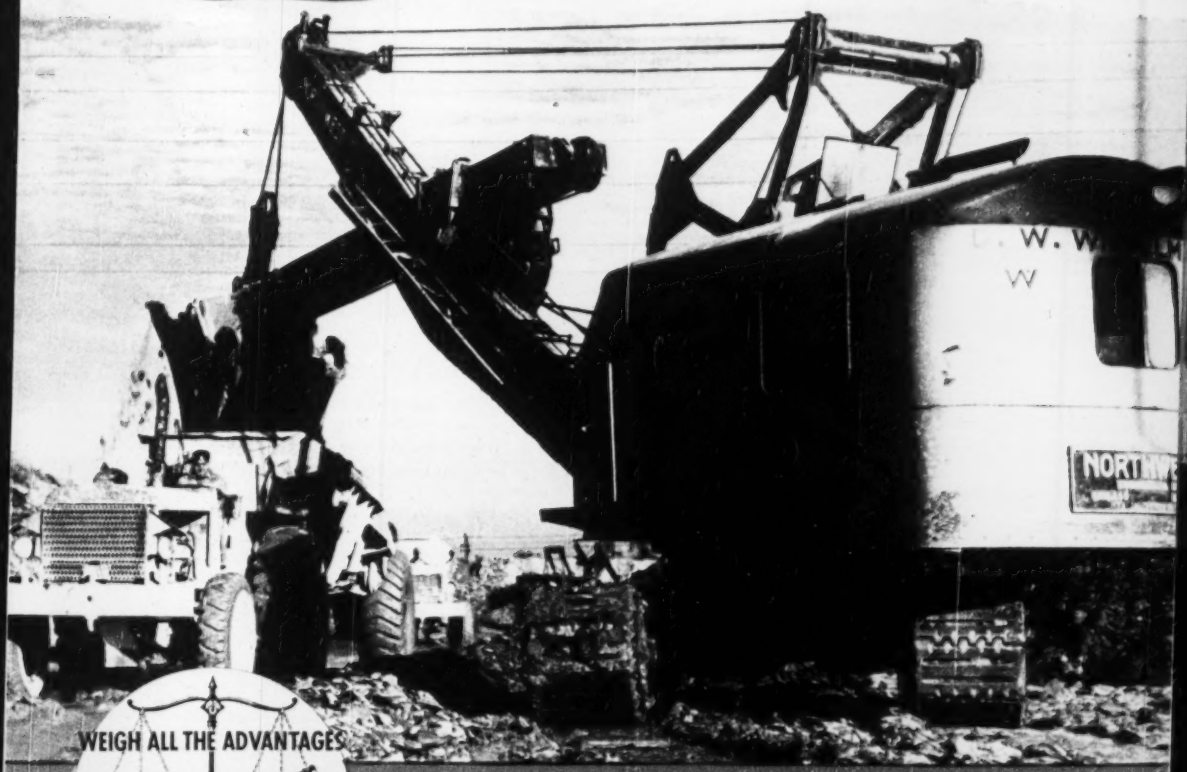
13 ..is a Lucky Number if it's a NORTHWEST

Another repeat order makes thirteen NORTHWESTS for D. W. Winkelman Syracuse, New York

THIRTEEN! Think that over you fellows who are planning ahead for the purchase of Shovel, Crane or Dragline equipment. You are looking for machine advantages that will make money. You're in business for profit — and Northwests are built to make profits.

Thirteen Northwests — 12 repeat orders — by a well known, progressive, active company, over a period of years can mean only one thing. They have found that the "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, Cushion Clutch, Northwest Dual Independent Crowd, Northwest Steering, Northwest Simplicity and other advantages do make money. Plan ahead to have these advantages on your own job! Follow the Northwest Crowd!

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois



WEIGH ALL THE ADVANTAGES

WHETHER SHOVEL, CRANE, DRAGLINE PULLSHOVEL or TRUCK CRANE

a star in every job!

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

WHERE PIPE LINES ARE CONCERNED...

It's never a lucky break

BELOW—Installing the 30" Lock Joint supply line for Ciudad Trujillo in the Dominican Republic. This line, undamaged by shocks which destroyed many structures in the vicinity, gave unimpaired service throughout the severe earthquake of 1946.

RIGHT—Damage attending the rupture of a large water main in a crowded community.

ONE SLIGHT FLAW IN A PIPE may develop the proportions of a major catastrophe when an important water line ruptures in a crowded area. Utilities can be impaired, property flooded, traffic stalled, business lost, life endangered. A bad break in more ways than one, but a break which could be avoided by using Lock Joint Pressure Pipe.

Lock Joint's water-tight expansion joints built into every section of pipe provide unrestrained flexibility under back loads to accommodate not only normal ground settlement but traffic vibrations and variations in temperature. The high factor of safety assured by its time-tested design of reinforcement provides for every pipe an abundant reserve against water hammer and pressure surges. Experience shows conclusively that Lock Joint Pressure Pipe does not fail.

When planning your next water supply main—specify Lock Joint Concrete Pressure Pipe—the pipe with a proven record of safety.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters from 16" up as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Whitestone, N. Y.; Turner, Kan.; Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

Only TIMKEN® offers all 3 rock bit types...and a complete Rock Bit Engineering Service!

DIFFERENT drilling jobs call for different bits—and only Timken can supply you with *all* of them! With all three types to draw upon—multi-use, carbide insert, or one-use "Spiralock"—the Timken Rock Bit Engineering Service can give you the drilling performance your job requires—whether it's lowest cost per bit use, lowest cost per foot of hole drilled, greatest possible drilling speed or other advantages.

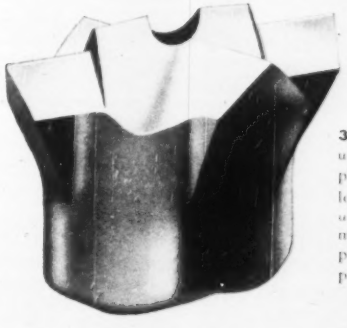
Feel free to call upon the Timken Rock Bit Engineering Service at any time. Contact your nearest Timken Service and Sales office. And for full information on rock bits, write on your company letterhead for the newest rock bit booklet, "Timken Removable Rock Bits". Our complete line of bits are shown in actual size with detailed descriptions. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

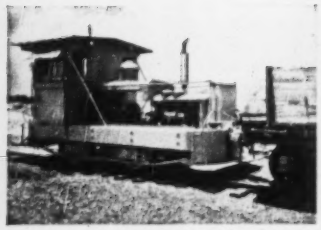
your best bet for the best bit . . . for every job

1. MULTI-USE. Basic removable rock bit for 18 years. Gives lowest cost per foot of hole when full increments of the steel can be drilled and when all bits are returned for proper reconditioning. Low cost. Requires less policing than carbide insert bits.

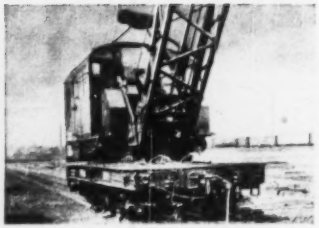
2. CARBIDE INSERT. For extremely hard and abrasive ground, small holes, extra deep holes. Lets drillers spend more time drilling—less time changing bits. Holes go down faster. Bit reconditioning is simplified.



3. ONE USE "SPIRALOCK". For use where reconditioning is impractical or undesirable. Offers lowest bit cost. New "Spiralock" union holds bit dependably—permits easy removal. Simplifies steel preparation. More bit applications per drill steel.

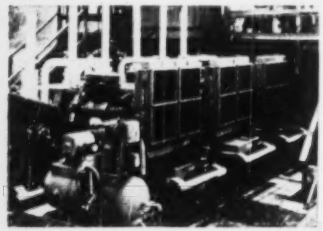


LOCOMOTIVES—Repowered with GM Diesel Torque Converter unit, this 20-ton locomotive hauls double the tonnage without ever shifting into low gear.



HOISTING—Converted from steam to GM Diesel Torque Converter power—estimated operating savings will pay repowering and overhaul cost in less than two years.

EARTH MOVING—Two 190 H. P. GM Diesel Torque Converter units give 34-ton Euclid 1-FFD rear dump a speed of 25.4 m.p.h. with full load.



DRILLING—"⅓ faster than with original engines," says owner of rig repowered with 3 GM "Twin" Diesel Torque Converter units.

LOGGING—Powered with GM Diesel Torque Converter unit, this Washington Iron Works yarder has yarded 140,000 bd. ft. per day.

WRITE FOR YOUR COPY

of 24-page illustrated catalog giving full details on design, operation and application of "The NEW General Motors Diesel Engine-Torque Converter Unit."

How to Get *MORE WORK* from your Equipment

Operators in every field report they get more work done in less time at lower cost with equipment powered by General Motors Diesel Engine-Torque Converter units.

The combination of a GM Diesel engine with an integrally built torque converter and fluid coupling provides a compact power unit which makes available maximum engine horsepower and torque regardless of the speed of the load. It delivers high torque for starting heavy loads and *automatically* shifts to fluid coupling when load requirements equal engine torque. Gear shifting is cut to a minimum—often eliminated. Smooth transmission of power through a fluid, protects both engine and driven machinery from sudden shock loads—prevents engine stalling under any load condition.

These efficient Diesel Engine-Torque converter units are available with 3-, 4-, and 6-cylinder engines, Twin 4 and Twin 6 multiple engines, rated at 64 to 294 B.H.P. See your GM Diesel distributor or write us for further information.

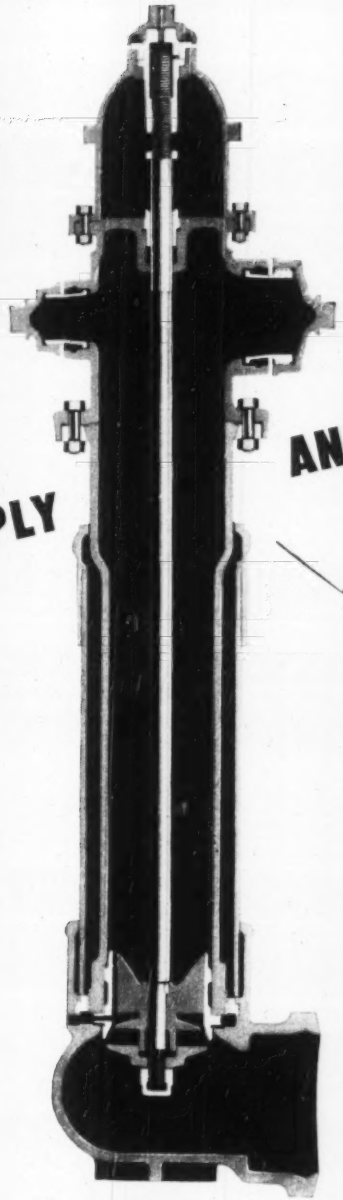
DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . . . Up to 275 H. P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS . . . Up to 800 H. P.

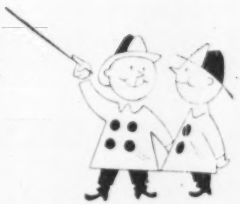
GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK



SIMPLY AND SOUNDLY CONSTRUCTED



Simplicity of construction pays off in dependability and ease of maintenance.

MATHEWS MODERNIZED HYDRANTS SET THE PACE: All working parts contained in replaceable barrel • Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head • Nozzle outlets easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • A modern barrel makes an old Mathews good as new

MATHEWS HYDRANTS

THE FIREMAN'S FRIEND

Made by R. D. Wood Company

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

STANDARD ENGINEER'S REPORT

DATA

LUBRICANT RPM Delo Oils

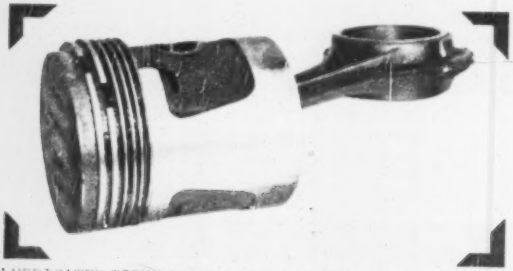
UNIT 1½ ton truck – 6 cyl. Ford – Model F5 engine

CONDITIONS Low engine temperatures – City deliveries

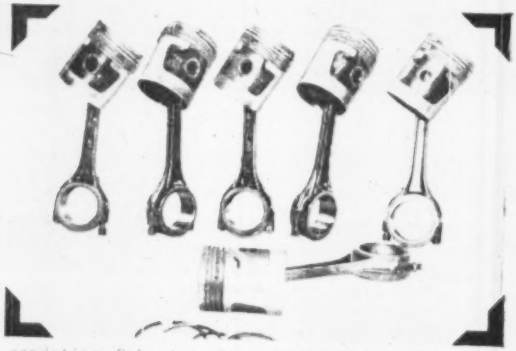
PERIOD 2 years

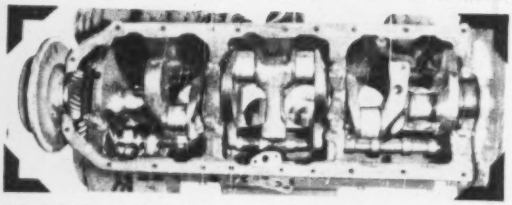
FIRM Pacific Cheese Division of Bordens, San Francisco Cal

Only 0.004 inch wear in 68,740 miles stop-and-go driving!



LUBRICATED WITH RPM DELO SPECIAL OIL, these pistons from an engine overhauled for the first time after two years and nearly 70,000 miles of tough delivery-service operation, had no broken or stuck rings. Grooves were clean and all oil-return holes open. All bearings, including mains, were in good condition. Reboring of the cylinders was not necessary because none of the six cylinders was out of round and taper ran only 0.004 to 0.0045 inch.





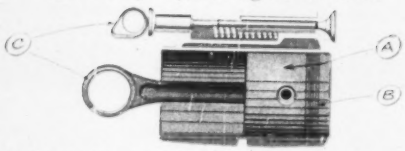
THE ENGINE WAS EXCEPTIONALLY CLEAN as this picture indicates. Cylinder walls were free of lacquer and there were no deposits in valve chambers. Only a thin carbon film was in the bottom of the pan. Valves, pistons, bearings, all parts except rings, were put back in service.

REMARKS: This engine was used in Sacramento under widely varying temperatures. Its stop and go operation seldom allowed engine temperatures to reach normal. There is an RPM DELO Lubricating Oil to meet every heavy-duty engine operating condition.

FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.

RPM DELO LUBRICATING OILS

How RPM DELO Oils meet tough operating conditions



A. Contain special additives that provide metal-adhesion qualities . . . keep oil on parts whether they are hot or cold, running or idle.

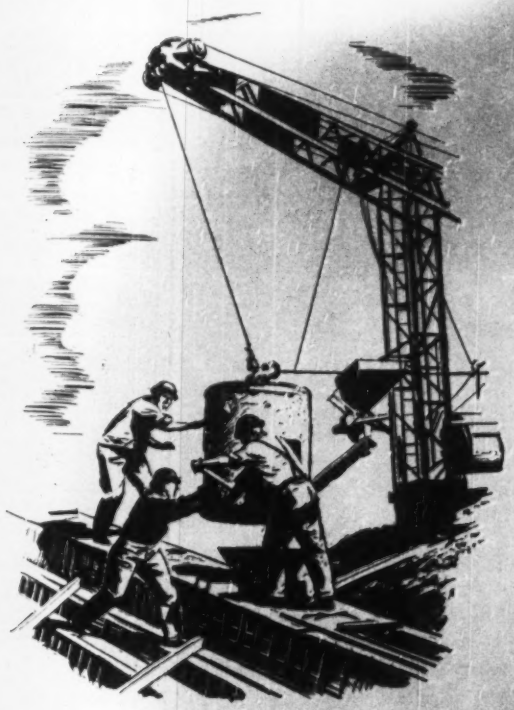
B. Antioxidant resists deterioration of oil and formation of lacquer . . . prevents ring-sticking. Detergent keeps parts clean, helps prevent scuffing.

C. Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Perth Amboy, N.J., Chicago, New Orleans
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

Today it's Roebling!



Why men who watch costs specify Roebling Preformed

THE RECORDS PROVE IT . . . that Roebling Preformed "Blue Center" Wire Rope stays on the job longer and cuts your costs. This is partly because "Blue Center" steel—developed and made only by Roebling—has unsurpassed resistance to abrasion, shock and fatigue. In large measure, too, it is because of the painstaking care, special techniques and modern precision machines that guard and maintain Roebling quality leadership.

Preformed a big help, too. Wide experience in the field proves that Roebling *Preforming* brings still more operating economies. Preformed is easier and faster to handle and install. You can cut it without seizing. It winds better . . . is not apt to set or kink . . . minimizes vibration and whipping.

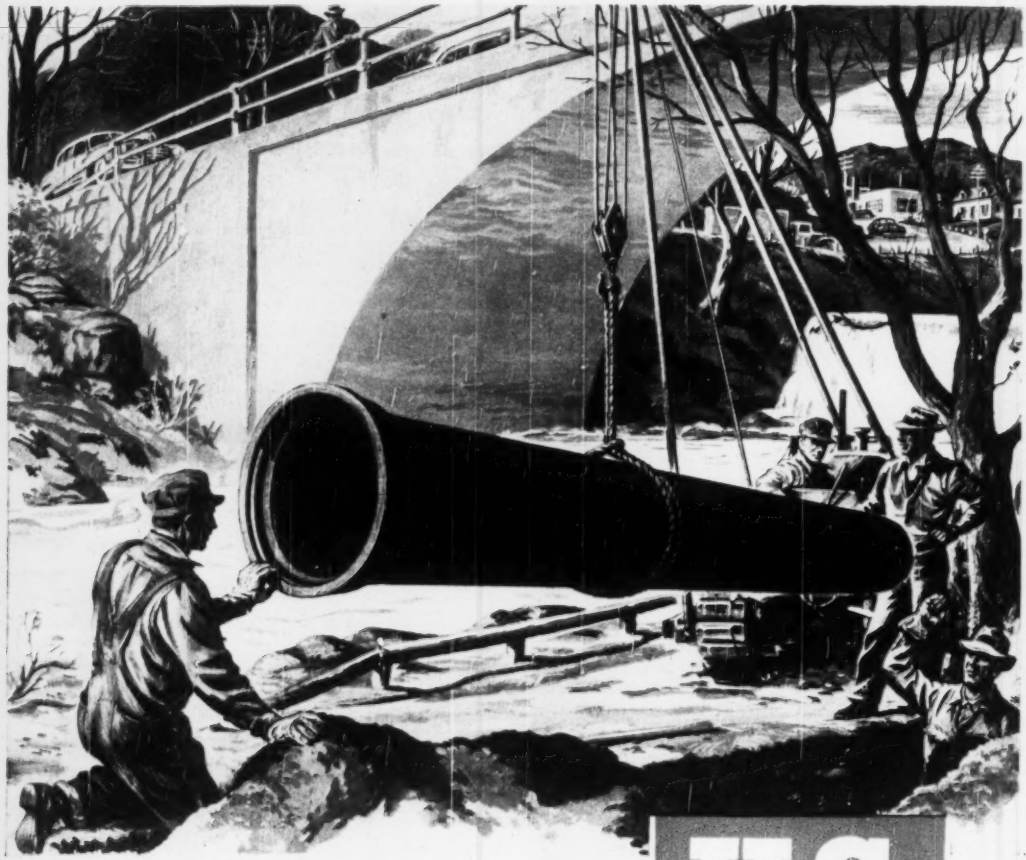
Today's best buy. Roebling makes wire rope of every construction, grade and size . . . engineered for top efficiency on every type and make of rope-rigged equipment. Have your Roebling Field Man recommend the *right* rope for best, low-cost performance on each installation. John A. Roebling's Sons Company, Trenton 2, N. J.

Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope lasts longer; brings fewer shut-downs; cuts down replacement time; saves wire rope dollars.

ROEBLING

A CENTURY OF CONFIDENCE

Atlanta, 934 Avon Ave. * *Boston*, 51 Sleeper St. * *Chicago*, 5525 W. Roosevelt Road * *Cincinnati*, 3253 Fredonia Ave. * *Cleveland*, 701 St. Clair Ave., N. E. * *Denver*, 4801 Jackson St. * *Houston*, 6216 Navigation Blvd. * *Los Angeles*, 216 S. Alameda St. * *New York*, 19 Rector St. * *Philadelphia*, 12 S. Twelfth St. * *Portland*, 1032 N. W. 14th Ave. * *San Francisco*, 1740 Seventeenth St. * *Seattle*, 900 First Avenue S.



Painted for U. S. Pipe & Foundry Co. by Paul Lehr

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

IMAGINE that you have just heard about cast iron pipe for the first time! Would you not be eager to buy some? For what other pipe material used in constructing underground mains is as inexpensive to maintain? What other pipe material has a proved service record of over 100 years in city streets? What other pipe material has all the strength factors of long life that should be required of pipe to be laid in city streets? Our product has lived up to the best traditions of cast iron pressure pipe for 51 years. United States Pipe and Foundry Co., General Offices: Burlington, New Jersey, Plants and Sales Offices Throughout U. S. A.

You get

Rugged Dependability

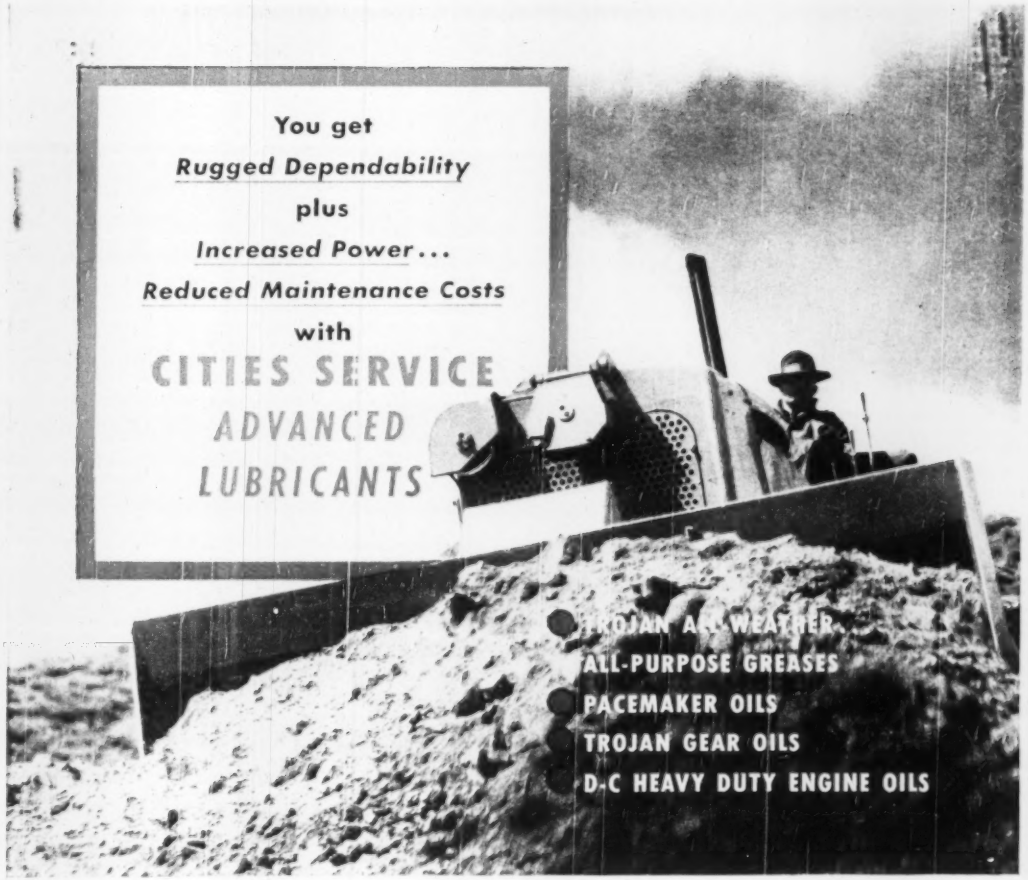
plus

Increased Power...

Reduced Maintenance Costs

with

CITIES SERVICE ADVANCED LUBRICANTS



EARTH MOVING and construction equipment like this powerful bulldozer takes severe punishment in even normal operation. Protect it from excessive wear . . . improve its performance with the finest lubricants available.

Cities Service has a remarkable new line of all-weather, all-purpose lubricants. These top quality petroleum products slash maintenance costs . . . reduce equipment down-time . . . step up the efficiency and power of all units under all kinds of heavy duty operating conditions. Learn today how you can gain big increases in the productive capacity of your units. Mail coupon below.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

VALUABLE FREE BOOKLET

Our new manual "Earth Moving and Construction Machinery Lubrication" is a handy, fact-filled guide to perfect lubrication. Write today.

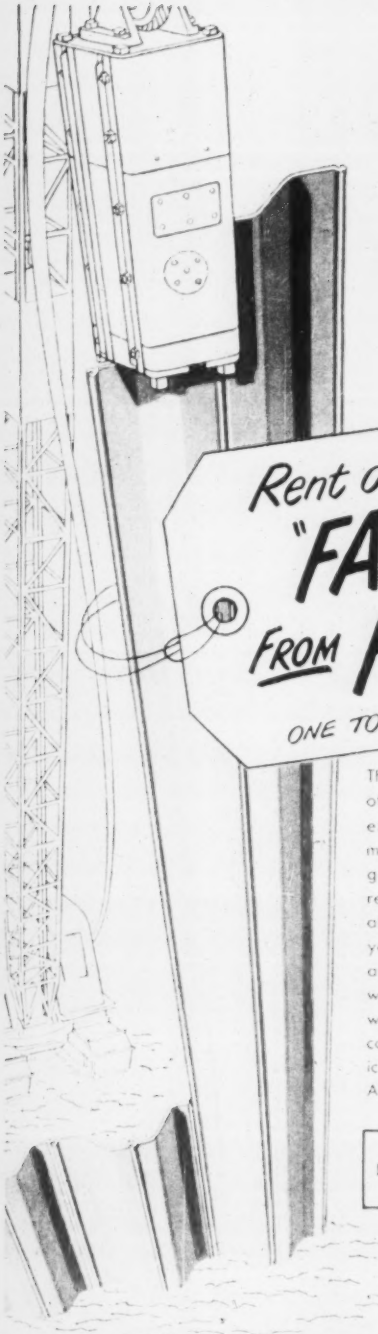
CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 661
New York 5, New York

Name _____

Company _____

Address _____

City _____ *State* _____



Need STEEL SHEET Piling?

Rent or Buy it "FASTER FROM FOSTER"

ONE TON OR A THOUSAND

The exact length and exact section of piling that the job requires—exactly when you need it, and at minimum cost . . . that's what you get when Foster services your piling requirements. And Foster Rates on all standard piling sections give you a low fixed expense, providing an added competitive advantage when you bid on jobs. Try us, whatever your needs; you can count on an exacting, prompt service on all sections and makes for ANY steel sheet piling job.

ALSO: *RENT OR BUY* LIGHT-WEIGHT CORRUGATED STEEL SHEET PILING

FOSTER GUARANTEE: All material is rigidly inspected before shipment. If on arrival the material is not entirely satisfactory to you, it is returnable, freight both ways at our expense.

Send for New Free Piling Reference Wall Chart # EP-6

STEEL PILING • PIPE & PIPE FABRICATION • RAILS • TRACK ACCESSORIES • WIRE ROPE

L. B. FOSTER CO.

PITTSBURGH 30, PA. CHICAGO 4, ILL. NEW YORK 7, N.Y. HOUSTON 2, TEX.

NEWS BRIEFS

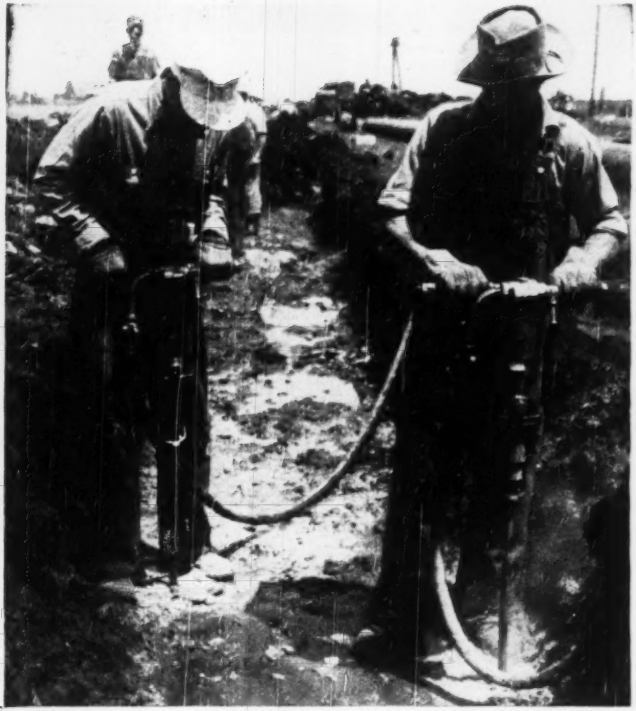
Record?—A crew working for Ben C. Gerwick, Inc. San Francisco engineering and construction firm, believes it has set a new world's record for pile driving. In one 8-hour shift one foreman, four pile drivermen, one operating engineer and two firemen drove 144 timber piles in construction of an effluent channel for the East Bay Municipal Utility District sewage treatment plant in Oakland, Calif. Piles were 30 to 35 ft. long, 15 in. min. butt dia., 8 in. min. tip dia., and were driven in clay and lenses of sand, with a final penetration of 10 ft. into firm clay.

Flood control—The Canadian Government and the provincial government of British Columbia, have made an agreement to undertake a flood control project in the Okanagan Valley at a cost of $2,417,259. The project will be completed by April, 1953, and the cost is to be equally divided between the two governments.

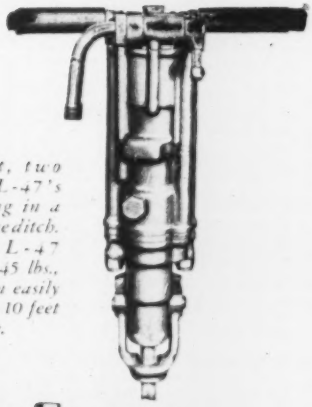
White elephant?—So far, the off-street parking garage recently constructed at Lincoln and Essex streets, Boston, Mass., in the down-town section, appears to be something of a white elephant. Ten bids for the right to operate the project have been rejected by the city. The highest bid refused by the Boston Real Estate Commission was $65,000 annually. Bidders failed to include a bond guaranteeing their year's rental. The garage is a part of the city's $5,000,000 off-street parking plan.

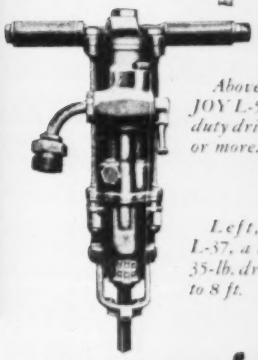
In suspense—A project to link San Fernando Valley and downtown Los Angeles by overhead monorail transportation moved a step further as corporation papers were filed, with initial capital stock of $100,000, by the Southern California Monorail and Transit System. The line would be an overhead carrier rail supporting passenger cars of a design not yet specified.

More rainmakers—San Bernardino County, Calif., will begin firing silver iodide into clouds Nov. 1 in an attempt to raise winter precipitation throughout the Santa Ana River basin. This far, 60% of the required $50,000 to keep the operation going until April 15 has been subscribed by various cities in the county. Fifteen irrigation companies, representing 90,000 acres in the river basin, are leading the



Left, two JOY L-47's working in a pipe-line ditch. The L-47 weighs 45 lbs., and can easily drill to 10 feet or more.

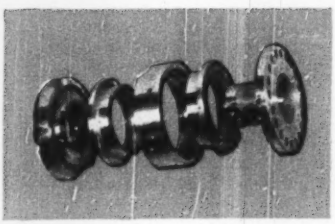




Above, the 55-lb. JOY L-57, for heavy-duty drilling to 15 ft. or more.

Left, the JOY L-37, a hard-hitting 35-lb. drill for depths to 8 ft.

Faster, harder *PUNCH* gives you more footage!



Famous JOY DUAL VALVE makes air do more work

with JOY THRO-WAY BITS

JOY SILVER STREAK CADMIUM-PLATED DRILLS

The *exclusive* features of JOY "Silver Streak" Drills—cadmium plating and the famous "Dual Valve"—mean just this to you: faster drilling and less cost per foot of hole—smoother operation, easier on the drill-runner—longer service life and less maintenance. ● Prove these advantages for yourself—write for bulletins, and let us arrange a demonstration for you *on the job!*

Consult a Joy Engineer

W&D C2065

JOY MANUFACTURING COMPANY

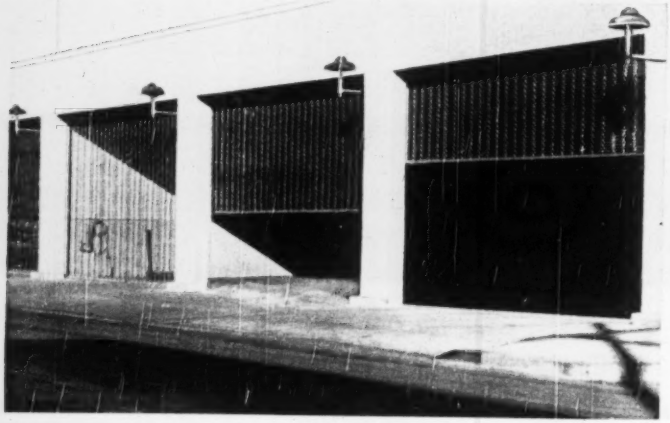
GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

CONVENIENT
ATTRACTIVE
ALL-STEEL

Protection

that doesn't cut off light, air or vision



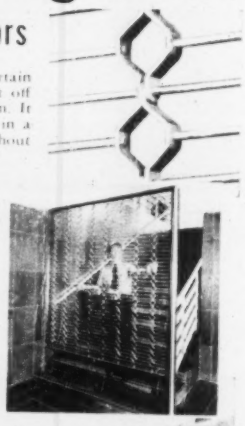
Kinnear Steel Rolling Grilles

For Windows, Doorways, Corridors

This all metal barricade guards any opening with a curtain of rugged steel rounds and links. Yet it doesn't cut off light, doesn't block vision, doesn't impede ventilation. It can be lowered into place or raised out of the way in a matter of seconds. It offers convenient protection without loss of architectural beauty. As the pictures here testify, it's the ideal way to prevent trespassing in areas where the public assembles, or wherever it is desirable to block off certain sections of a building.

Kinnear Rolling Grilles open straight upward and coil into a small, out-of-the-way space above the opening. No usable floor or wall space is wasted. In many installations, the mechanism on which the Grilles coil when opened can be concealed within the lintel construction.

Kinnear Rolling Grilles are made to fit any size window, doorway, corridor, stair well, elevator shaft or other opening. They can be equipped to operate manually, mechanically (by chain or crank) or electrically. Easily installed in old or new buildings. Write for complete details.



The KINNEAR Manufacturing Co.

FACTORIES: 1920-30 Fields Ave. — Columbus 16, Ohio
3742 Yosemite Avenue — San Francisco 24, California
Offices and Agents in All Principal Cities

KINNEAR
ROLLING GRILLES

campaign. Engineers have estimated that with cloud seeding rainfall over the 2,600-sq mi watershed will increase from 30 to 50%.

Want cross-state road—In Kentucky a 21-county association has been organized to promote a through-numbered highway from the mountains to the Mississippi River along the state's southern border. The proposed route passes by or near many of Kentucky's outstanding scenic and historic spots, including Mammoth Cave.

Is there any smog?—The Los Angeles City Council has kept its rejection score perfect by refusing still another site for a proposed municipal incinerator. This time a location in the West Los Angeles area was turned down by the council, which hasn't approved a single proposed incinerator site in the metropolitan Los Angeles area since $2,100,000 in bonds for the incinerators was approved by the voters more than two years ago.

Sky Sewer—Los Angeles smog isn't carried off by prevailing winds because of inversions (stagnant air strata impenetrable to lower, polluted air), according to Irving P. Krick, West Coast meteorologist. His solution: Pump smog through tunnels to hilltops, then blow it up through tall (maybe 600-ft) sticks that pierce the inversion layer.

No help to bathers—The Massachusetts House of Representatives has killed legislation that would have authorized a $2,000,000 bond issue for the development of public beaches, including one operated by the state at Salisbury. This bill had been substituted for an administration measure calling for the establishment of a new division of public beaches in the Department of Conservation. It carried a proposed appropriation of $150,000 to start operations.

Freight cars needed—New England's construction industry is feeling the effects of a shortage of freight cars. While a big percentage of Boston's lumber comes by water, other sections of the New England area depend upon the railroads for their lumber supplies. Lumber manufacturers on the West Coast, whence most of the big lumber comes, have been facing one of the worst freight car shortages in their history, partly due to military requirements. It is thought that this shortage is bound to affect New England's lumber supply before long.

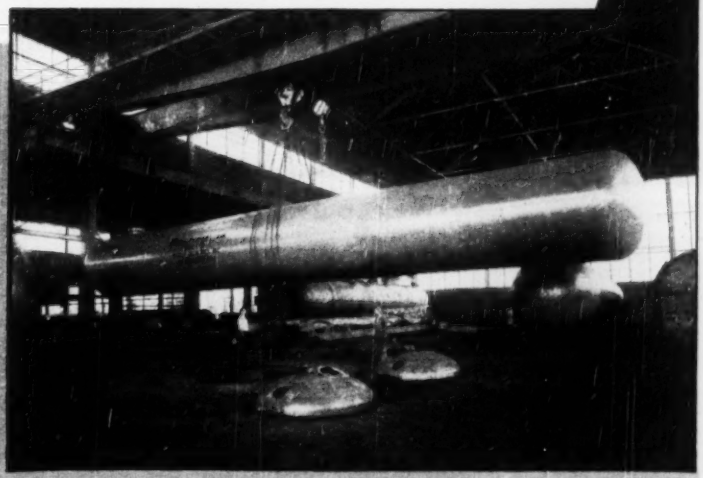
FIND OUT HOW POSEY *"stacks up"* ON YOUR STACK JOBS

- *for* GUARANTEED *construction*
- *for price* SAVINGS

When your stacks are fabricated at the Posey Iron Works, price isn't "upped" to allow for hesitations in the engineering department . . . false moves in the shop. Since 1910, Posey Iron has constructed steel tanks and stacks in capacities and sizes up to maximum.

Forty years of experience . . . accumulated case histories over the same period . . . permit Posey Iron to design and construct with a sureness that often cuts dollars from the estimate. Stack performance is frequently guaranteed. Posey is equipped to do the completé job . . . from design to fabrication to erection.

It pays to find out how Posey "stacks up" on stack jobs. Write today for free bulletin.



This 50-ton crane (27-foot headroom) allows quick, easy handling of sizeable units like this butane tank. Addition of equipment like this has been a feature of Posey Iron Works production expansion.

Established 1910

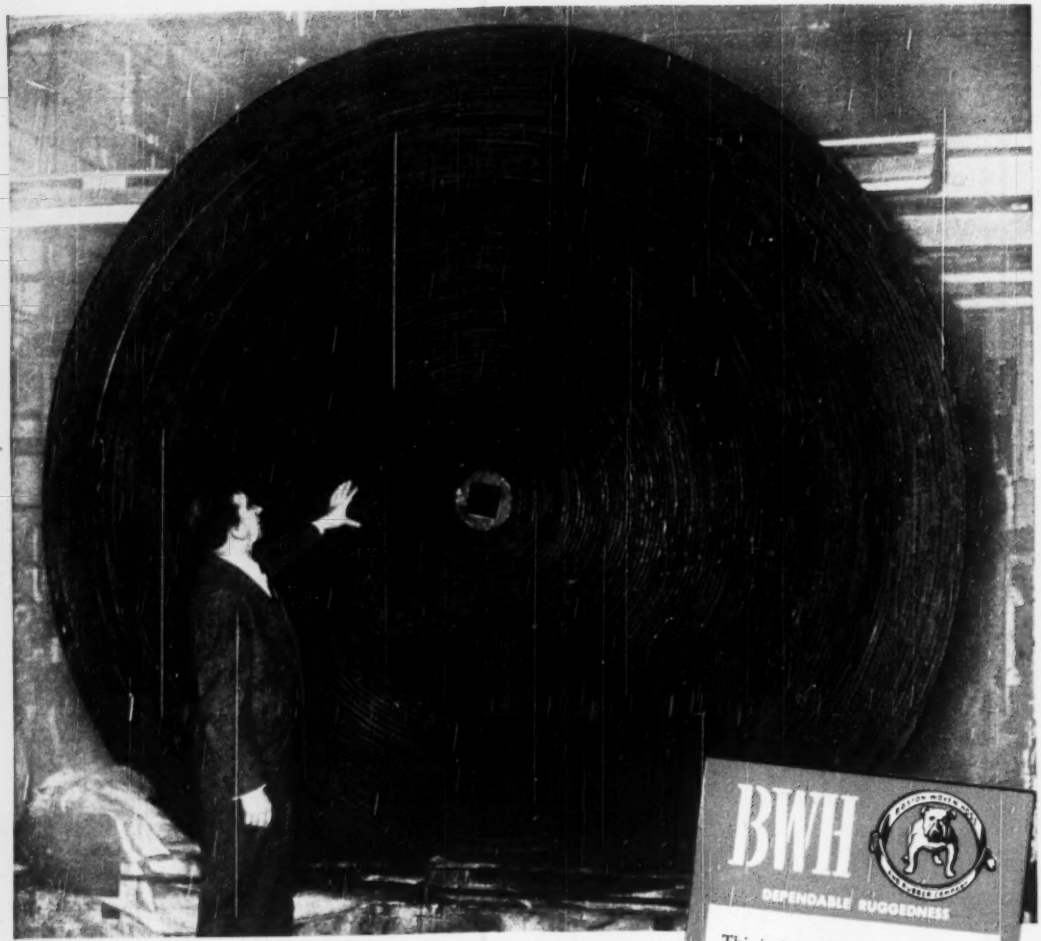
POSEY IRON WORKS, INC.

ELEVATED TANKS
STACKS • TANKS
STORAGE TANKS
GENERAL STEEL
PLATE FABRICATION

STEEL PLATE DIVISION
formerly LANCASTER IRON WORKS, INC.

LANCASTER, PA.

DIVISIONS
BRICK MACHINERY
FOUNDRY • INDUSTRIAL
HEATING • IROQUOIS
SHIPBUILDING
STEEL PLATE



Huge *one piece* BWH Belt

DESIGNED TO CUT WASTE LINES!

When BWH engineers were called on to produce a fast, power-saving, economical belt for a coal mine, this 18-ton Silver King ROTOCORD BELT was the result. It's one of the largest one piece conveyor belts ever produced. Made by the famous, exclusive BWH ROTOCURE Process of continuous vulcanization, this giant is 1576 feet long, 48 inches wide. It will haul better than 500 tons an hour on a rugged grade at the fast clip of 400 feet per minute. Maintenance worries are lessened by the absence of splices. It's another top performance by BWH . . . leaders for 71 years in the manufacture of mechanical rubber goods of dependable ruggedness for use in all industries.

HAVE YOU A JOB WHERE STAMINA COUNTS? Bring us your toughest problems. We're specialists in solving them. Consult your nearest BWH distributor or write us direct

BWH
DEPENDABLE RUGGEDNESS
This is the ROTOCURE Process of continuous vulcanization, exclusive with BWH. It does away with the 30 to 40-foot overlaps occurring in the duck carcass in old-fashioned flat-press curing, eliminates the possibility of operational weakness caused by such overcuring.
Cured Belt
Continuous Uniform Cure
Continuous Uniform Stretch

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS., U.S.A. • P.O. BOX 1071, BOSTON 3, MASS.

THE CONSTRUCTION WEEK

WHITHER UNION MEMBERSHIP?—One of the sidelight results of Korea and the mobilization program may be an increase in union membership. Most labor observers figure that the union movement (estimated total membership: Somewhere between 14,000,000 and 16,000,000) reached its peak about 1947, and has been barely holding its own since then. Losses (particularly to CIO) when the big shipyards and other war industries shut down, plus an increasingly hard core of workers who just aren't interested, have about balanced any gains of new workers. But, with a war economy coming up, the experts look for a new influx of workers into the union ranks—and, more importantly—for a softening in the attitude of many white-collar workers, who remember they didn't fare too well in comparison to other workers in the war years.

CONCRETE FOR MAINE?—Impressed with recent advances in concrete manufacture, the Maine State Highway Commission is said to be ready to reverse a long-standing policy and call bids for concrete highway paving. For many years the state shied away from concrete paving, because tough Maine winters broke down concrete paving faster than any other surfacing—or so commissioners believed. New cement components, promising a concrete that won't chip and crack under severe winter weather, have prompted the commission to consider a few stretches of such pavement as an experiment.

NOT MUCH—YET—Construction activity for the rest of 1950 isn't going to be much affected by the mobilization program outlined up to mid-August. Say the experts: Only slight curtailments of peacetime construction activity will be necessary—unless war spreads beyond Korea, or outside troops come in there to help the North Korean forces now engaged.

INFLATION DUE—Washington seems thoroughly agreed that your dollar will be worth less by the end of the year than it is today—that the cost of living and of doing business is on the uptrend and will continue there for a while. The politics of the situation favors inflation: The Administration feels it wouldn't be too bad, if we could only keep on with booming business, plentiful jobs, high wages, good farm prices. The belief is that Truman's advisers want to manage the boom—not choke it off. They think they can do this by using selective controls—allocations, consumer credit, price-wage fixing, rationing. They'd rather do that than resort to unpopular control by real restrictions on credit and too-heavy taxes.

POWER PROGRAM EXPANSION?—Another odd result of swift mobilization developments came to light: Interior department officials are studying an expansion of the agency's power program as a result of Secretary Chapman's directive about cutbacks (ENR Aug. 24, p. 23). What's under study is this: Which projects now under construction could be speeded up if it's decided that more federal power is needed; what new projects could be urged as contributing to defense. An example is approval of the Eklutna project for Alaska (ENR Aug. 17, p. 28). The backing for the expansion study is contained in Chapman's directive, which included the statement that power construction "will be continued undiminished . . . because of direct connection with the national security."

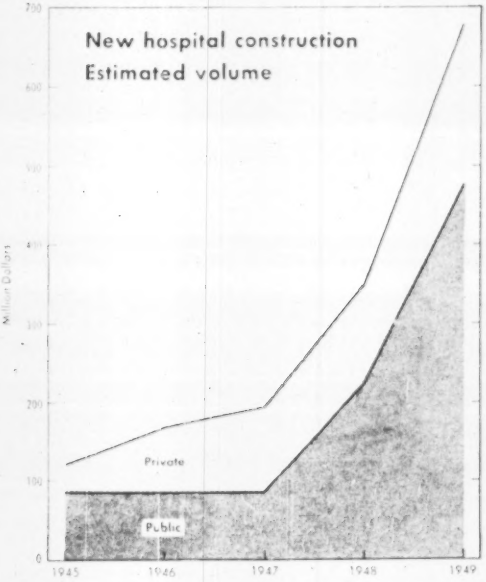
SITUATION NORMAL—Building materials prices have been rising slowly—but the rise shouldn't be attributed entirely to Korea, according to W. D. MacDonald, regional director for labor statistics at Boston. MacDonald insisted that continuing heavy public demand for housing, plus rising wages, is responsible, pointing out that the general rise is traceable to the beginning of the year, shows no significant spurts since Korea.

REAL BATTLE—Heated differences between House and Senate over the Army Civil Functions bill almost led to physical combat in the conference committee on the Omnibus Appropriations measure. Only cooler-headed colleagues prevented Chairman Kenneth McKellar (aged 81) from assaulting Rep. Clarence Gannon (aged 71) chief of the House group. Gannon and his group were standing firm for the House-sponsored cut of $200 million below-budget estimates. They aimed scorching comments at the Senate's move for a $132 million boost above what the House wanted —particularly in the matter of unbudgeted projects that the Senate had added.

MANPOWER POLICY—There's a new statement due from the White House on deferment of skilled workers who are members of armed forces reserve components. The statement is now being prepared by the National Security Resources Board, cooperating with Defense and Labor departments. The idea is to reconcile civilian and military demands, if possible. Present defense policy is to defer a reservist only if he is "engaged in a critical occupation necessary to a highly essential activity," and he will be deferred only until he can be satisfactorily replaced. Unlike the draft, dependency is not a factor in recalling a reservist—but consideration will be given in hardship cases.

This is an
INLAND
HI-BOND
Reinforcing Bar
It not only meets but exceeds the minimum standards set up by ASTM A305-49.
Its proper ratio of bearing to shearing area provides greater bond between the steel and concrete thus providing more efficient transfer of stress at splices and reducing the size of tension cracks. This means a more efficient and better looking structure.
It saves your client's money. In many instances, end hooks can be completely eliminated which means a saving in steel, fabricating and placing costs. Because a single wire loop holds HI-BOND firmly in place—even during pouring of concrete—there are savings in wire and tying time.
It is available for prompt shipment from the Ryerson Company and other leading steel warehouses throughout the middle and far west.
It costs *no more* than ordinary reinforcing bars!
Specify Inland HI-BOND—the reinforcing bar with the built-in anchorage.
INLAND
STEEL COMPANY
38 South Dearborn Street • Chicago 3, Ill.

CONSTRUCTION TRENDS



BOOMING BUSINESS IN HOSPITALS

Will the boom in building hospitals go on?

Hospitals, historically, have been only a small part of total construction. But, since 1940, the dollar volume of work in private and public hospital and institutional work has increased six-fold. That is probably faster than any other class of construction has advanced.

Private and public hospital construction this year is expected to total about $870 million. That's more than 3% of the total volume of new construction as forecast by the Department of Commerce.

Korea, however, may result in a slow tapering off in hospital building. Restrictions under the mobilization program probably will not affect more than a small part of the work planned for this year. But they could cut into next year's volume.

Outstanding in the hospital construction picture is the fact that public financing dominates the field. During the 1930's, about two out of every three hospital construction dollars came from public sources. That marked a gain from the 1920's. Federal aid programs during the depression years brought a sharp rise in public financing.

During the last 10 years, private financing of hospitals has gained markedly. From a level of only $33,000,000 a year in 1940, privately financed hospital construction jumped to $202 million last year. But meanwhile, publicly financed construction has risen from $54,000,000 to $477 million.

Greatest gains in volume came in 1948 and '49. Hospital construction gained 79%, between '47 and '48 and jumped again 95%, the next year. It was this skyrocketing, in both public and private building, that brought this class of construction up to its present impressive level.

Will hospital work go on at anything like this level? Prospects are that it will. According to economists of the former Federal Works Agency, the nation's needs for hospitals total $8.5 billion. That's outside of the backlog of federal veterans' hospitals. Only requirements for highways, schools and sewer and water facilities were estimated as larger than for hospitals.

Moreover, the accelerating trend of hospital construction is in itself an indicator of importance. Hospital work has gained far more rapidly in the last few years than has highway work, for example.

At the beginning of this year, President Truman's budget message outlined estimated expenditures for veterans' hospitals at $238 million and expenditures under the Public Health Service Hospital aid program at $136 million.

True, the veterans' program will taper off. It is expected to be about 75% complete at the end of this year.

But the federal aid program was expected to maintain hospital construction at a high level for years to come. The program, authorized in 1947, first allowed the federal government to contribute one-third of hospital construction costs. Recently, however, the share was raised to two-thirds. That was expected to speed up outlays for private and state and local government hospital construction.

The Public Health Service itself has a big backlog of hospital construction work. At the end of May, the Service had 1,340 projects in its programs. Only 6% had been completed. About 54% was under construction. Some 40%, or more than 500 projects, had been approved but not yet started.

How all this will be affected by the mobilization program is not yet clear. The President has requested all federal agencies to review their construction programs. But the agencies won't abandon their construction work. In fact, many of the jobs—power programs, some roads and probably hospitals among others—will get priorities as essential construction.

There may be some slowdown in building private hospitals. But, with the huge needs for hospitals, it is likely that both the federal agencies and state and local governments will put them high on their list of essential work. Certainly, they'll come well ahead of most types of public works.

STAINLESS STEEL CASTING

ELEVEN ACRES OF FOUNDRY FACILITIES

The above 24,000 pound 18% chrominum and 8% nickel stainless steel hydraulic turbine runner casting was recently produced in the Newport News foundries for the Hoover Power Plant in Nevada.

Eleven acres of foundry facilities including modern sand handling, mold making and melting equipment, are available for producing castings. In addition to metallurgical laboratory facilities for physical and chemical analysis, Newport News is equipped with Gamma-Ray, Radiograph and Magnaflux equipment to assure thorough inspection of foundry products.

Your inquiries for stainless steel, iron, steel and brass castings will receive prompt attention.

NEWPORT NEWS

Shipbuilding and Drydock Company

Newport News, Virginia

Construction Cuts for Defense

THE EFFECT that defense preparations will have on next year's volume of construction is still pretty vague. Yet each day that passes adds evidence that the reduction below this year's high level will not be great.

The latest straws in the wind come from Congress where highways, dams and flood control are being measured for appropriations. Substantial cuts are being mentioned in connection with federal road aid, but in most cases these cuts merely apply against previously proposed increases. They are not yet deep enough to suggest less road work next year than this.

Criteria for cutting Reclamation and Army Engineer work have been drawn up, which, if ruthlessly applied, could effect a 20% reduction. But they won't be applied, even as conscientiously as the agencies themselves would do it, because individual Congressmen will bring irresistible pressure to bear in favor of a good many questionable projects. Considering the high priority given to power projects, the reduction in federal river work is not apt to exceed 10%.

What will happen to private and to state and municipal construction is more difficult to estimate. Availability of materials and the level of costs are the prime influencing factors. However, if the military estimates are right, and only 4% of the country's steel capacity is going to be required to fill defense needs, the material situation is not as critical as it was believed. And if costs can hold somewhere near present levels, the feared inflationary deterrent may not develop.

On the basis of present facts and trends, therefore, the construction cuts for defense are not going to be deep. The requirements of the limited mobilization program, it would seem, can be carried by the current economy with a little straining.

Secondary Road Funds Cut

PRESIDENT TRUMAN had all the logic on his side when he asked Congress to cut back the amount of money authorized for secondary road work in the current highway bills. The Senate bill was particularly bad as it carried a provision that the money authorized for secondary roads must be used on county roads. That was put in the bill for political purposes before world conditions became as critical as they are today.

Spending federal money on secondary roads at any time is questionable practice; certainly it cannot be justified at a time when all unnecessary public work is being cut to release men, equipment and materials for the defense program.

The Senate's initial refusal to meet the President's request may only have been a gesture designed to impress the politicians back home who wanted the money for county road work. However, it could hardly impress the rest of the country with the Senate's seriousness of purpose. There is so much road work that must be continued during this period of emergency that the Senate might better have made sure that this needed work could go ahead by quickly cutting all less important items out of its highway legislation. What is needed now is enough federal aid money to assure that work on the main national road net will not be slowed down but rather accelerated.

Civilian Defense Planning

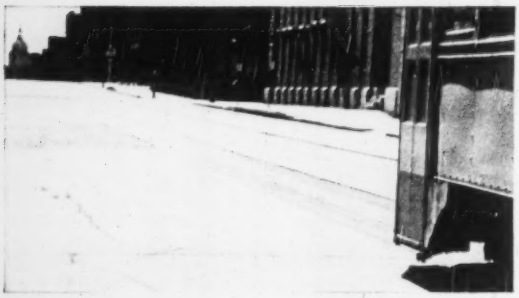
THIS NATION has no approved plan for protecting civilians against air attacks of any kind, atomic or otherwise. The National Security Resources Board, which has been responsible for civilian defense since March of last year, is said to have a plan that is to be made public Sept. 5 at the meeting of the Council of State Governments in Chicago. It was prepared by the board's Office of Civilian Mobilization.

Another plan has been prepared by the Defense Department. It places on the army, navy or air corps responsibility for maintaining proper contact with civilian agencies in carrying forward specific parts of the program where cooperation between the military and civilian agencies is necessary. Of special interest to the readers of ENR is revival of field studies by the Corps of Engineers of the effect of bombs on structures. Also, the corps has initiated a study of the design of underground industrial plants.

Meanwhile, Congress is getting concerned over the lack of an approved program for civilian defense, hence it can be expected to come up with something very soon.

The significance of all this confusion in Washington is that local planning must go forward for a time at least without any overall guidance and coordination from agencies of the federal government. Many states have already started their planning and have set up directors with authority to draft plans and coordinate the activities of municipalities and other local organizations.

As an example, Gen. Lucius D. Clay, head of New York State's civilian defense activities, has enlisted the aid of the state's construction contractors and the State Public Works Department to plan for the best use of equipment and know-how in a major emergency. In the far west, plans are being made to handle mass evacuations from exposed coast cities. At this rate, by the time Washington catches up with the states, much of the basic planning will have been done. It is to be hoped, however, that the NSRB plan will furnish the states with the overall guidance that is so badly needed. Otherwise time and money will be wasted, and neither is expendable.

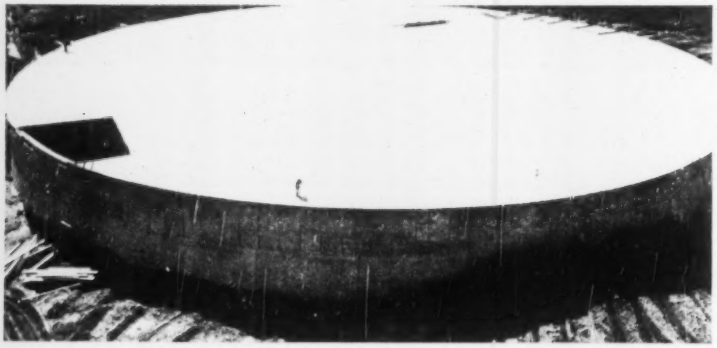


Ten Years Ago...

this test paving was laid in Minneapolis—the first commercial use of Atlas® Duraplastic® air-entraining cement. Badly scaled background section was made with regular cement. Foreground concrete was laid at the same time with Duraplastic cement. Here are both sections, photographed ten years later, after ten severe winters, heavy applications of deicing salts and many freezing-thawing cycles—convincing proof of Duraplastic concrete's lasting durability. Longitudinal structural crack shows some raveling. Note perfect transverse joint.

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

Today... A typical report says: "DURAPLASTIC*... highly resistant to the effects of freezing and thawing"



7,000,000-gallon Water Reservoir, South Bend, Ind. Contractor: Thomas L. Hickey, Inc.; Duraplastic ready-mixed concrete, Kuert Concrete, Inc.; both of South Bend.

The contractor on this 1000-cu. yd. concrete reservoir built exclusively with Atlas Duraplastic air-entraining portland cement reports:

"... walls have a pleasing appearance with smooth texture and no 'honeycomb' spots or streaks. We particularly like Duraplastic for structural concrete, especially if it is exposed to the weather. Duraplastic concrete is highly resistant to the effects of freezing and thawing..."

This report is typical. For Atlas Duraplastic air-entraining portland cement has proved its advantages in a wide variety of structural and mass jobs: foundations, walls, columns, and floors. It's ideal for slip-form, gunite and other uses. It requires less mixing water for a given slump; gives a more plastic, uniform mix; places and finishes easily.

Atlas Duraplastic complies with ASTM and Federal Specifications, sells at the same price as regular cement, calls for no unusual changes in procedure.

Send for free new booklet, "A Decade of Atlas Duraplastic Air-Entraining Portland Cement." Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

Offices: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*Reg. U. S. Pat. Off.

ENR 0 107

ATLAS DURAPLASTIC

TRADE MARK REG. U. S. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

NBC SUMMER SYMPHONY CONCERTS—Sponsored by U.S. Steel Subsidiaries—Sunday Evenings, June to September

ENGINEERING NEWS-RECORD

AUGUST 31, 1950 VOL. 145 NO. 9

New York road defense plan enlists contractor assistance

State already has man-machine-material inventory 90% complete; will maintain list with AGC help; announces highway, water-supply defense plans

New York state has sprung quickly to action in civil defense plans for its public facilities, notably roads.

Last week officials of the State Department of Public Works met with the New York State Chapter, AGC, in Syracuse to complete plans for keeping the state's highways open in case of atomic attack. The state already has 90-percent-complete information on the amount and location of construction men, equipment and materials that could be put to work clearing roads at short notice. Clearance work would be directed by a public works department committee of seven men, backed up by the department's ten district engineers.

Purpose of the DPW-AGC meeting was to establish a reporting procedure to enable the state's committee to keep its non-equipment material inventory up to date. The reporting, probably on a 30-day interval basis, will be administered by seven more AGC committees, with the assistance of ten more AGC men located in the ten state highway districts. A third information on location and quantities of materials, moves of men and equipment, will go from AGC district representatives to DPW district officers for transmission to the central DPW committee at Albany.

The organization for keeping roads clear already is in existence, having been established with the aid of the initial inventory within a period of 30 days after Gen. Lucius D. Clay, chairman of the state Civil Defense Commission, directed the DPW to set up a system. The system includes a working force of trained skilled men who have been organized into working teams throughout the state.

• **How the plan works.** The organization is based on the existing state, county and city public works departments augmented by specialists from private concerns. These specialists include bulldozer operators, welders and blasting experts. Small crews of men in local areas, using construction units will be on call in each of the department's ten districts, and a special team, equipped to repair large bridges, will work out of state headquarters at Albany.

Under the civil defense program, the department is responsible for blasting, cutting and bulldozing debris from highways, and for repairing roads, bridges, dams, canals, and other facilities.

To handle the task, the department must keep a running inventory of existing facilities and of construction factors. It is in keeping up the inventory that the AGC chapter plays its vital part.

Maps of all roads and waterways, giving load limits, clearances and other data are being prepared for use in planning detours and repairs. Inventories are being prepared by districts of brick, concrete supplies, wire rope, piles, trucks, etc.

Upon notice or warning of an attack on the state, 24-hr alerts will be maintained at the headquarters of the ten districts and in Albany. Through this organization it is planned that information from county and city departments and from other branches of the civil defense organization can be coordinated, so that an overall plan will keep main arteries of traffic open under any emergencies.

Barnard A. Tetreve, director of the department's Bureau of Research and Statistics, is chairman of the state's committee. Chairman of the corresponding AGC committee is Roscoe C. Holmes of Holmes and Murphy, Orchard Park, N. Y.

• **Civil defense and sanitation.** Meanwhile, in Albany 150 state sanitary engineers were in the midst of a three-day study of the sanitation aspects of civil atomic defense.

Studies of the two atom bomb explosions in Japan, both of which burst in air, showed relatively little damage to underground power cables and water mains, according to Stanley E. Barker, assistant director of the state health department's Bureau of Environmental Sanitation. The most extensive damage resulting from an air burst is to above ground utilities.

(Continued on page 24)

ENGINEER EQUIPMENT LANDS IN SOUTH KOREA—Villagers in this South Korean port hand-built a quay so that our forces could move their first construction equipment landward from the bow of LST. Welcoming delegation stands at right.

Army civil works bill agreed by conference

House proposals cut, Senate projects added; bill's work criteria may eliminate some Senate projects

Army engineer civil works get a record appropriation for flood control rivers and harbors in the omnibus bill agreed upon by conferees for the two houses of Congress.

But a catch in the general provisions of the omnibus bill probably won't permit the spending of the full $650 million provided in these two categories during the current fiscal year.

The compromise that came out of conference was a victory for the Senate. House conferees accepted cuts of the Senate figures: 12% in flood control, and 10% in rivers and harbors—without deleting 33 new projects that the Senate had added to the bill. The final total is still $53 million higher than originally voted by the House.

Actually, what cuts these do not correspond to cutbacks that the Army engineers already had told Congress they proposed to make. In fact, the House conferees wrote into the conference report the specific criteria that the Corps of Engineers has been applying for the last several weeks in selecting projects for deferment. These same standards will continue to be enforced in appraising all projects included in the new appropriation bill.

• **Is this necessary?**—Further, the conferees put into the report a requirement that no construction or planning of any new project can be started until the President certifies that the work is necessary to the war effort.

This requirement will block many of the new projects added by the Senate. At least a score of those projects had not been included either for planning or for construction in the President's budget requests.

To assure flexibility in spending money during the present mobilization period, the report states that the Corps of Engineers may reallocate construction funds among the projects listed in the bill, as found necessary for the war effort or for maintenance of economical construction schedule.

• **Planning ordered**—An innocent looking substitution in the general provisions of the omnibus bill may have considerable effect on the government's construction programs, including that of the Corps of Engineers.

The Congressional conferees eliminated a dozen pork-packed riders that would have required 10% cuts in funds and personnel of most non-defense agencies. But in their place, the conference inserted a general requirement that the expenditures of executive departments and agencies be pruned by $550 million, without impairing national defense.

This cut does not look too large in relation to the overall total of $52 billion in the omnibus bill. But when defense and fixed charges are excluded, the saving will have to be made out of less than $10 billion. Construction programs will certainly feel the knife.

Among other agreed-upon construction appropriations that may be greatly expanded in the planning process are these: Bureau of Reclamation, $52.6 million; veterans hospitals, $50 million; and federal aid programs for highways, $355 million; and airports, $37 million. Prospective cutbacks are offset even upon the commitment or contract authorizations such as $150 million for hospitals.

In screening the Army's civil works projects will be assessed on the basis of the tentative criteria now tentatively part of the conference report. (See criteria cited below.) The Corps of Engineers had told the committee that it could run the program $74 million below the Senate total of $792 million. That cut was made in the conference compromise.

• **The criteria**

1. The project includes the development of power.

2. The project provides industrial or municipal water supply or electrical energy.

3. The project is a dam and reservoir project which, if begun, is under way, or has been started and should be completed to a point of useful operation.

4. The project is an important navigation project.

5. The project protects important industries or major land producing areas.

6. The project can be completed in the 1951 working season, and where immediate costs would constitute an appreciable economic loss the work in place would be damaged if not protected and if relatively small amounts of additional work will make the project fully effective.

7. The project involves almost entirely the movement of earth such as channel improvements or levees and does not compete in the use of critical materials.

These standards would seem to qualify for continuance almost any authorized project in the program of the Corps of Engineers. Already, however, they have proved adequate for screening out additional work on a number of projects, principally agricultural levees, bridges, buildings and certain canal facilities.

Newark truck terminal squeeze play charged

PNYA says trucking firm offers uneconomic rental to operate new terminal stymied by teamster union

The multi-million dollar Port of New York Authority last week asked a Senate committee to investigate circumstances surrounding what PNYA said were the efforts of a Newark, N. J., truck firm to obtain control of the authority's $8,500,000 Newark Union Motor Truck Terminal.

In a general news release, PNYA said it had asked the Senate Crime Investigating Committee (Sen. Estes Kefauver, D., Tenn.) to check into the activities of the People's Express Co. of Newark, and Local 478, International Brotherhood of Teamsters.

The trouble hinges PNYA said, on a provision in Local 478 contracts with local truckers, which prohibits the transfer at the terminal of more than 5,000 lbs. of freight a day (about a quarter of a truckload) from over the road trucks except to delivery trucks driven by members of local 478. PNYA said that this clause had been inserted in contracts after terminal construction started, and often had been waived by the union in the case of other terminals in the Newark area.

In any case, said the authority, the terminal was completed in the latter part of June, a start at 8 was fixed and planned, and opening was scheduled for July 12. On June 7, the release said, the Port Authority met with union representatives, and informed the union that in the operation of the terminal, the authority would observe normal contract provisions.

Union officials, however, refused to waive the contract provision limiting transfers to 5,000 lbs daily.

On the day of the meeting, PNYA said, it received a letter from People's Express, to lease and operate the truck terminal for a period of from 25 to 50 years, at a rental of 40 cents a square foot on the ground floor, according to the release. The Port Authority's union difficulties make it difficult or impossible to operate the terminal, while People's Express has long experience with the Newark truck unions and knows how to get along with it."

Authority spokesmen said the rental for the 240,000 sq ft building would amount to about $96,000 a year, although the terminal should make about $488,000 a year to operate its cost.

On July 13, PNYA held another meeting with the union, but did not succeed in getting the transfer provision waived. And on July 19 and 21, People's Express made further inquiries, formally saying it would be interested only in leasing the entire terminal.

How to sell services and supplies for Defense-Department construction

Engineers and equipment and materials manufacturers will deal directly with Corps of Engineers and Bureau of Yards and Docks—Simple, decentralized procedure is already in force

The 1951 demands of the Army and Navy for engineering services and construction equipment and materials will be met by contracting and purchasing procedures already in familiar operation.

There is the utmost confidence in Washington on this point. Nor does this mean that the requirements engendered by the Korean war and the President's limited mobilization order are not substantial—by last year's standards they are huge indeed. What is implied is that advance planning for procurement has been done efficiently.

Definite procedures, both for the purchase of supplies and equipment and for engaging the services of engineers, architects and contractors can thus be detailed at the present time.

• **For design work**—If you want a design contract for architectural or engineering services from the Navy the place to start is the office of the Chief, Bureau of Yards & Docks, in Washington. Complete qualification records of the firm should be filed there. In contrast, if it is a Corps of Engineers assignment that is sought, the qualification data should be filed with the District Engineer's office in the area where the firm does most of its business. For firms capable of handling work in various districts, multiplexing is recommended.

A suggestion as to the type of information that should be submitted to the District Engineer offices and presently due to the Navy may be gathered from the following items which the Corps of Engineers cites as matters of basic concern in evaluating architect and engineer firms for particular jobs:

1. Experience of the firm as a whole in the particular design field involved.

2. Training and experience in the particular type of design undertaken of members of the firm and of key men who will be available for the project under consideration.

3. Experience and training of other staff members to be engaged on the project.

4. Experience and ability in organizing staff and integrating and coordinating work in all fields. Bearing on this is the present size of staff, of working space and past experience.

5. Capacity of firm to handle project with available experienced personnel. Total number of persons and volume of work that the firm will have while engaged on the proposed project must be considered with relation to the capacity of the available organization.

6. Experience in the design of the auxiliary facilities.

7. Ratings for previous architectural-engineering work for the Department of the Army.

Having such data available when a design contract is to be made, the district engineer selects a minimum of three firms to be considered for selection. If the construction value of the project is under $500,000, the district engineer selects the firm to do it. If the value is in excess of $500,000, the list of at least three firms, arranged in the district engineer's order of preference, is submitted to the Office of the Chief of Engineers in Washington for study and recommendation.

Construction contracts for the present are going to be limited to lump sum competitive bidding. Plans are ready, however, to institute construction contracts on a negotiated basis whenever this becomes necessary.

• **For equipment and supplies**—If you want to sell construction equipment and materials to the Corps of Engineers, the procedural pattern is just as definite. Right now all equipment and all materials except lumber are being purchased by the Corps' Chicago procurement office. Lumber is being purchased by the St. Louis procurement office, which also operates three regional offices at Chicago (for hardwood purchases), Atlanta (pine) and at Portland, Ore. (fir).

These two procurement offices—Chicago and St. Louis—are considered adequate to handle the increased purchases contemplated under the President's limited mobilization plan. But if and when complete mobilization should be ordered an expanded set-up is already to go. Then there would be five procurement offices—the present two plus New York, Philadelphia and Pittsburgh.

Then, too, according to the plan that Maj. Gen. Lewis A. Pick, Chief of Engineers, instituted more than a year ago, the purchasing load will be further decentralized and specialized. All construction materials will be purchased at St. Louis; all construction equipment at Chicago; mapping, surveying and special equipment at New York; utility equipment, such as wiring, plumbing and the like, at Philadelphia; and bridges at Pittsburgh.

These service offices, as a matter of fact, are now in existence, with small numbers of personnel who are devoting themselves to mobilization planning in cooperation with manufacturers of equipment and materials. Under the present Defense Department plan, the purchase of particular items for all the branches is assigned to a particular branch. For example, the Corps of Engineers buys all tractors, while the Navy Department's Bureau of Yards and Docks buys all graders. How the procurement assignments for construction equipment and supplies line up is detailed below.

Who Buys Construction Equipment and Supplies

Rock drills	C of E[c]
Wheel mounted excavators	C of E
Crawler excavators	Budocks[b]
Scrapers	C of E
Tractors	C of E
Graders and maintainers	Budocks
Self-propelled loaders	C of E
Crawler parts and wagons	C of E
Bituminous equipment	C of E
Concrete equipment	Budocks
Cement handling equipment	Budocks
Road compacting and soil preparation equip.	C of E
Jacks and concrete forms	C of E
Demountable scaffolding	C of E
Agricultural Machinery	C of E
Crushing and screening equipment	C of E
Motor vehicles	Army Ordnance[d]
Lumber and Wood products	C of E[e]

[c] Address for C of E items, except lumber—Chicago Procurement office, Corps of Engineers, 226 W. Jackson Blvd., Chicago 6, Ill.

[b] Address for Budocks items—Yard and Docks Supply Office, U. S. Naval Construction Battalion Center, Port Hueneme, Calif.

[d] Address for motor vehicles—Detroit Ordnance District, 6301 W. Jefferson Ave., Detroit 7, Mich.

[e] Address for lumber—St. Louis Procurement Office, Corps of Engineers, 1132 Boatmen's Bank Building, St. Louis 2, Mo.

Federal civil defense plans begin to emerge

Corps of Engineers resumes tests for bomb - resistant structures; Defense announces plan; NSRB's next

One important civil defense plan already has been announced, and another will be unveiled next week. The latter will be the National Security Resources Board's blueprint for civilian defense, to be presented Sept. 5 in Chicago at a meeting of the Council of State Governments.

The former plan is that of the Defense Department. A recent directive points out that while local municipal police gives civilian agencies primary responsibility for civil defense planning, civilian efforts will have to be supported in many ways by the armed forces.

As part of the defense plan, Army Engineers now are preparing to receive explosion tests in Utah and Colorado. These tests, part of an elaborate study of the effects of enemy bombs on structures, were abandoned when funds ran out two years ago. Now the Defense Department has come up with the money to resume this work.

Although the tests will be aimed at finding types of structures needed for wartime command posts and other vital centers, the findings will be made available to civilian defense planners.

The Army Engineers already have received from its engineering firm the details of two typical underground industrial plants. The work was done under contract. The information is being added to what already is known of underground installations from German experience.

• **Defense's assignments.** Last week Secretary of Defense Johnson gave out specific assignments.

Army is to work on plans, policies and recommendations for civilian auxiliaries, on aircraft, military police and the development of an explosive ordnance disposal program.

Navy is to plan for port security, shore control, naval harbor patrol.

Air Force has the primary responsibility of operating the Civil Air Patrol, the aircraft observer system and the development of a prototype civil aircraft warning system.

The Joint Chiefs of Staff is to review and coordinate plans for civil defense activities that involve more than one military service. JCS also is to develop recommended defense policies as to what areas might be attacked by the enemy and from what point such attacks originate should be considered.

Munitions Board is to coordinate and consolidate industrial mobilization plans for the effective construction of industrial plants working on military contracts. Plant dispersion problems are part of its responsibility.

Research and Development Board is to analyze Defense Department research and development programs to see what may be applicable to civilian defense requirements.

• **NSRB plan.** The NSRB plan is understood to have details on about twenty aspects of civil defense services, such as engineering, fire, police and communications. The NSRB favors dispersion of industrial plants, rather than digging in. The Army is not convinced that underground plants have no value. They point out that the Germans had 145 underground plants going toward the end of World War II, and that they even made synthetic gasoline underground. When the Security Resources Board's plan is presented to the Council of State Governments, the administration will be told that it is their responsibility to put the plans into operation. NSRB spokesmen claim that this could be done in six months.

National AGC plans

Plans to guide state and municipal officials in organizing and training demolition-clearance teams are being developed by the Associated General Contractors of America for the National Security Resources Board. The disaster groups would go into action to clear the streets and remove damaged structures in event of enemy bombing or other destruction.

A preliminary report has been made by the AGC to the NSRB, and a second, more complete report is expected after the association's board meeting that starts Sept. 11 at Chattanooga. The 110 AGC chapters and branches will be asked for their ideas on the overall plan submitted by the contractors. Volunteers on the state and city chapters of heads on organizing on plans with local officials. Direct experience will be obtained in organizing the field units.

Purpose of the plans is to make full use of contractor organizations and equipment in wartime clearance work. The AGC is also working on the assignment for Mr. Johnson has discussed the plan and will attend a conference of defense NSRB meetings with public works and [illegible] officials.

New York plans . . .

(Continued from page 25)

and structures, hence rescue units must be equipped with their own power facilities.

By valving off the relatively few damaged water mains, an Albany-ravaged city probably could maintain adequate water supply, Barker said. He pointed out that recently achieved chlorination or water-softening processes would decontaminate water containing radioactive material.

Classes at the three-day session were devoted to specific problems of safeguarding public water, food and milk supplies under atomic attack.

On the administrative side of civil defense in the sanitary field, New York State Health Commissioner Dr. Herman E. Hilleboe has ordered reactivation of the state's wartime plan for relief to communities suffering bomb damage to water utilities. The state's Mutual Aid for Water Service plan, designed for speedy relief to bombed areas where water facilities are disrupted, also provides for the interchange of water between adjacent communities, where interconnecting piping can be installed readily, and for transfer of materials and personnel from unbombed areas to stricken communities.

Non-union contractors attack Maryland wage law

Non-union contractors have attacked the constitutionality of Maryland's new prevailing wage law in a suit filed in Circuit Court No. 2 in Baltimore, Md.

Judge Joseph Sherbow gave the Commission on Prevailing Wages until Sept. 5 to show cause why it should not be enjoined from proceeding under the law, which provides for minimum wages on all state contract work.

Four non-union contractors—the Mullen Contracting Co., Colvill Construction Co., Dyson-Young Construction Co., and Hines A. Kueth, Inc.—were named in the suit by four industrial employments and the Associated Builders and Contractors of Maryland, Inc.

Among other reasons advanced the contractors object to the law because, they claim, it substitutes and unreasonable. Also, the petition alleges that the act is opposed by Employers Conference Board, Inc., paving unions, the Baltimore Building and Construction Trades Council and the respective purpose of eliminating competition [illegible] open shop contractors in bidding [illegible] Maryland state work.

CONSTRUCTION BUSINESS

Lumber market runs wild; most prices go higher

Lumber prices are crazier still than they were just after the war—mostly up, but a few actually down and some holding at last month's highs.

Lumber production in the second quarter of 1950 was the highest in more than 30 years. But the unprecedented construction boom, the recent war demand for Ltr. material and an unprecedented railroad car and container ship shortage have piled up orders faster than shipments can be made. Production has gained over shipments so far in the third quarter, but orders have continued to pile up, too. Stocks are unbalanced and price rises vary dizzily by size and type of material.

In detail, a round-up of conditions shows for the twenty cities for which ENGINEERING NEWS-RECORD reports prices:

Lumber prices are still holding at their late July highs in these four cities: Philadelphia, Birmingham, New Orleans, Dallas.

Other prices are actually down in Baltimore, to move stocks in competition with pine, although prices of the latter are none too high.

Elsewhere everything is up.

• **Boston** prices are up $4 to $5 on pine, $10 on the larger sizes, and $5-$10 on fir, with 1-in. pine in the $91-$96 ranges, fir $100 to $118. Pine is $96-$120 for 2-in. stock up to 2x10s, 4x12 rough is $124, out of yard. Fir is $113-$120 including 8x12s up to 12x12s rough, 2nd.

• **New York** fir prices are unchanged since late July for 2x4s up to 2x10s at $125-$135 delivered. 8x12s, 6x12s and 12x12s are up $10 to $135-$145. Pine 8x12s rough are holding at $135-$150 and 12x12s and 12x12s are holding at $210-$240. But 1-in. pine is up $10 to $120-$135, 2-in. is up $5 to $115-$140.

• **Philadelphia** lumber is moving in volume as fast as received. Most is in higher side of price range. Pine is $107-$115 for 1-in. 2, 2-in. material, fir $120-$130. Hemlock fir is $130-$140, hemlock pine $150-$160.

• **Baltimore's** suppliers in south are shopping trailer loads and taking price up to-wire, while local is in transit. Quality is very poor, much 1"x6" unscreened and not running uniform No. 2 grade. Pine priced at up $3-$4 for 1-in. as $110-$115, fir down $5-$6 to $103-$10. On 2-in. pine, as city, $12-$30 to $85, fir down $1 to $105, except 2x10s, where pine is up $22 to $95 and fir is down $2 to $107. For 3x12s rough, pine is up $9 to $95, fir down $1 to $105 but pine 2x12s are down $5 to $140, 12x12s down $5 to $145, and fir 12x12s are up $5-25 to $105.

• **Atlanta** pine is up $19-$20 for 1-in. to $90 and $94, up $12 to $75-$84 for 2-in. except 2x10s and 3x12s which are up $13 to $88. Rise is due to unbalanced stocks and light mill supplies with buying heavy even at the higher prices.

• **Cleveland** lumber situation is still tight and uncertain, pine is up $20 for 1-in. boards to $113-$117, up $20 for 2x4s to $110 up $12-$17 on other 2-in. to $110-$112, fir 2x4s up $6-50 to $110-50, 8x12s, 6x12s, 12x12s up $7 to $112.

• **Cincinnati** pine is up 10% with desirable items off market and large construction timbers available for outstanding orders only. Pine is up $10-30 to $113-50 $114-18 for 1-in. and for 2x6s and 2x8s, but pine 2x4s are up $21-20 to $125. Fir is up $26-60 to $122-00 for both 1-in. and 2-in. except 1x8s and 2x10s which are up only $7 to $105.

• **Pittsburgh** pine and fir both are up $10 on most sizes to $95-$100 for pine, $100-$110 for fir, $110-$120 and $130-$140 in the larger sizes.

• **Detroit** pine is up $22-$24 to $120 for 1-in., $25 to $110 for 2x4s. Fir is up $7-50 $8-50 to $103-50 $104-50 for 1-in. and $29 to $114 for 2x4s. The Weyerhaeuser strike is over but not much material is available as yet.

• **Chicago** pine is up $17-$23 for 1-in. boards to $115-$120, fir up $3-$6 to $114-$118. On 2-in. pine is up $14-$18 to $106-$117 except 2x10s which are up only $5-$4 to $114, fir is up $5-$11 to $124-$126. Prices are difficult to establish. The car shortage plagues this market too.

• **St. Louis** lumber made further extraordinary increases. 1-in. pine up $20-30 $25-75 to $122-25 $135-50, 2-in. up $13-75 $20-05 to $115-75 $135. Fir 2x4s are up $15-50 to $147-50, other 2-in. fir is up $15-50 $25-50. M. to $143-50 $146-50 delivered. 12-in. fir up $13-25 $14-75 to $144-75 $146-25.

• **Minneapolis** pine is up $10 to $130-$140 for 1-in., fir is up $5 to $125-$130, for 1-in., $120-$135 for 2-in. $140-$145 for heavier material.

• **Kansas City** pine is up $11-$13 to $125-$130 for 1-in., fir is up $7-$11 to $119-$130. For 2-in. material pine is up $7 to $132-$135 and fir is up $4-$5 to $129-$135 with the larger sizes holding at late July prices.

• **Denver** quotes no prices for dom. lumber which is off the market. 2-in. is up $5-$9 to $134-$136 and heavier material is up $10 to $146 to $152-$148.

• **Seattle** mill prices for Douglas fir are up $5 to $60 for all sizes.

• **San Francisco** buys from mills that are producing adequate supply but car shortages hamper deliveries. Prices at mill range from $85 to $89 for 1- and 2-in. material and $80-$85 for heavier pieces with rail freight from the Northwest $11-50-$15 for heavy stuff, from Northern California $9, truck rate $12 except for surfaced stock which is $2-$3 less.

• **Los Angeles** prices for 1-in. and 2-in. fir are up $5-$7 to $108 at the yard, 3x12s up to 12x12s are up $8 to $121-$136.

Wage changes for month

All is relatively quiet along the labor front this month.

• **Chicago** has had a second round of wage increases for this year of from 5 to 15 cents an hour, granted to 6 crafts.

Plasterers will get a 5-cent raise Sept. 4 increasing the hourly pay to $2.75; they received a 15-cent hike July 31, to $2.70. Lathers, 5 cents Sept. 4 to $2.75; their rate went up 15 cents July 24 to $2.70. Sheetmetal workers, 10 cents Oct. 2 to $2.55; an additional 5-cent raise will go into effect Jan. 1. Boilermakers, 10 cents Oct. 2 to $2.60.

Pipe fitters and plumbers, 15 cents Oct. 2 to $2.60; they recently had a 15-cent increase; pipe fitters' welding status changes Oct. 2 from 5 cents an hour to a flat three per cent. Electrical workers' wages went up Aug. 7 from $2.524 to $2.65 an hour.

Carpenters, who recently got a raise of 5 cents an hour plus 5 cents an hour more for a welfare insurance fund, have voted against the welfare provision in favor of an increase of 10 cents, making the hourly rate $2.55 as of June 1.

• **Minneapolis** reports some over-all payments with contractors considering adjustments for bricklayers and cement finishers.

• **Los Angeles** carpenters got court order returning them to work at old rate of $2.20 per hr. but some are refusing to work. They want $2.325 and a few contractors are probably paying it. Building contractors have offered a 2.5 cents an hour increase over the $2.20 rate. Structural ironworkers are up 12.5 cents to $2.50, ornamental ironworkers to $2.40, plumbers to $2.625.

BIDS AND BIDDERS

Major projects recently received after Construction Reports page 62 went to press

Paper Mill—Chester Pulp & Paper Co. awarded contract for $40,000,000 paper mill in Nekoosa, Wis., to J. A. Utley Company, Detroit, Mich.

Dam—U. S. Engineers asks bids Nov. 1 on construction of Chief Joseph Dam across Columbia River, Bridgeport, Wash., for estimated $70,000,000. Col. E. C. Bechner is district engineer.

Electric and Water—Port of Spain, Trinidad, opted $870,724,000 for Island-wide water project at $14,724,000 and electricity system at $56,000,000.

Utilities, Buildings—U. S. Engineers plan to construct utilities, warehouses and roads at Fort Richardson, Anchorage, Alaska, to cost approximately $16,234,000. Col. E. H. Seaman is district engineer.

Office—Prudential Insurance Company of America, Houston, Tex., receives bids Sept. 15 on 15-story basement office building to cost an estimated $8,000,000. Kenneth Franzheim is architect. Dale S. Cooper & Associates and Ward Buttrick, all of Houston, structural engineers.

Power Plant—Alabama Power Co., Birmingham, will construct the 7th unit, steam generating plant in Coosa, Ala., to cost an estimated $10,000,000.

Laboratory—Atomic Energy Commission, Los Alamos, N. M., awarded contract for laboratory to Utah Drywell Company, Los Alamos, for $11,209,200.

Power Plant—Utah Power & Light Co., Salt Lake City, plans to construct a new 75,000-kilowatt steam turbine-generator electric power plant to an estimated $10,000,000. J. V. Hale is chief engineer.

Communications—U. S. Engineers will build a $1,203,840 electrical project dealing with communications at improved site in Alaska. Col. E. H. Seaman is district engineer.

Plant—C. M. Gage & Sons, Concord, N. C., awarded initial contract for Robbins Mills, Inc., Rayon waste plant in Richfield, N. C., at $7,000,000.

Housing Project—Municipal Housing Commission, Louisville, Ky., asks bids Sept. 12 on New South Housing Project of 75 buildings with 554 apartments. Estimated cost is $7,950,000. Fred Hartstern and Louis & Henry are architect; E. R. Ronald & Associates, all of Louisville, engineers.

Housing—Milwaukee, Wis., Housing Authority received low bids on the 724-unit Westlawn Housing Project for general construction from Klosing Engineering Corp. at $5,971,980; for plumbing from S. V. Hanley Co., $527,447; for electrical work from Magna Electric Co., $495,000; and for heating from J. J. V. Christiansen Co., Inc., $554,000. Schwartz, Schneider, Schweitzer and Trapp, all of Milwaukee, are architects.

Sewer—Philadelphia, Pa., Department of Public Works awarded contract for main gravity interceptor sewer to Post, Keyser & Seitz Co. and Bates & Rogers, Chicago, Ill., at $3,625,514. A. Zeller is chief engineer.

Housing—Hartford County Housing Authority asks bids Sept. 11 on 600 low-rent housing units on 42 buildings located at Kensington St. Estimated cost is $6,000,000. Kaelcyd Build is architect. Henry R. Zeller & Associates, engineers.

Plant—Dow Chemical Company, Midland, Mich., plans to construct a multi-million-dollar petrochemical plant on Thames River 10 miles north of New London, Conn.

Shopping Center—Herbert Hiller, Dayton, O., plans $5,000,000 shopping center on Big Hills Ave. between Rockhill Ave. and Lincoln Park Blvd.

Highway & Bridges—N. J. Gorney & Sons, Conn. Industries, Pt. Pleasant, low bidder on contracts totaling $1,000,000 for highway, reinforced plate girder and I-beam bridge and reinforced concrete bridge near Mansfield, Pa., at $1,775,550.

Scale Plant—Stock Weighing Engineering Corp., will build 50-ton truck scale plant near Kansas City, Mo., for Eastern Motor Co.

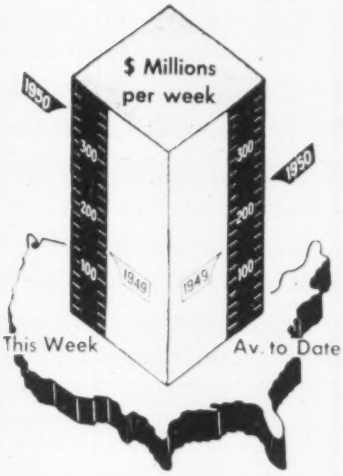
Military Housing—U. S. Air Force awarded contract for 600 housing units at Stewart AFB, Perry Brothers, Inc., Tenn., to M. J. Holt & Sons of Nashville. Estimated cost is $5,000,000.

Housing—New Haven, Conn., Housing Authority will build 300-unit housing project at Brick St. for an estimated $4,000,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100	1913	1926	1949
Constr. Cost (Aug. 24)	520.69	276.25	168.14
Bldg. Cost (Aug. 24)	482.36	266.69	168.63
Volume	238.1	217	175



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Aug. 31 1950	1950 wks.	1949 wks.	Cumulative change
[illegible]				
U. S. Total	$			

Contracts by type of work

	This Week	1950 wks.	Cumulative 1949 wks.	change
[illegible]				

New capital for construction

	1950 wks.	Cumulative 1949 wks.	change
[illegible]			
Total Capital			

Indiana Road Commission frowns on political "favors"

The Indiana State Highway Commission last week threatened immediate dismissal of employees "giving away state-purchased materials and lending the use of state-owned equipment and labor paid by the state."

The commission order followed reports that highway workers had been using state equipment and material for "friends and politicians." Commissioners estimated hundreds of thousands of dollars would be saved by enforcing political reform in the department.

The order came in a letter to workers by Maintenance Superintendent Earl B. Lockridge. It was written at the request of the commission.

In the meantime, the supreme court of Pennsylvania is considering a "free work" scandal in Pittsburgh, where the accidental death of a city employee recently revealed the alleged fact that he and others had been working at taxpayer's expense on private work for top city officials. The court is ruling on whether the attorney general or the district attorney shall conduct an investigation into this alleged misuse of city labor and materials.

County claims default; cancels school contract

Anderson County, Ky., Fiscal Court has directed its county judge to notify May-Bilt Construction Co., Frankfort, that a $470,305 contract between the parties has been terminated.

Covering the construction of four school buildings, the contract was signed Nov. 15, 1949.

Brock & Johnson of Lexington, architects on the project, had certified that the contractor had defaulted on his contract.

An official of the contracting firm said that his company at the end of July submitted an invoice for $56,000 to Anderson County. This amount covered work already done. The county declined to pay and so declined to work, the official said.

Contractors penalized

For failing to meet project-completion deadlines, two contractors on New Jersey highway work will have a total of $2,507 deducted from their bill payments. State Highway Commissioner Raymond J. Abbott has ruled recently.

The check-out of the Kaighn-Cox Construction Co., of Philadelphia, will be reduced $2,357 because of delays in completing the Trenton Freeway, and the Perelli Contracting Co., of Trenton, will forfeit $240 for "not providing an adequate field office" in constructing Park Avenue at South Plainfield, Middlesex County.

Boston sues contractors for deficient paving jobs

Suits against four paving contractors investigated by the Boston Finance Commission have been entered by the city of Boston on the ground of breach of conditions of bond (ENR June 22, p. 30). Two other contractors were partly exonerated by public works commissioner George G. Hyland, who pointed out that while the contract requirements were not met precisely, substantial work was performed, leaving in doubt the question whether the contractor is in debt to the city. The suits named the following sums in the four cases first referred to: $150,000, $70,000, $45,000, and $75,000.

Commissioner Hyland stated that the inspectors and engineers assigned to the street projects under question were the tools walking sticks of higher-ups in the department. In the future these men will be assigned to other than contract work. In order to close existing loopholes in the city's contract system, steps have been taken to insure proper prosecution of the work by contractors and to insure suitable inspection and engineering work on all projects.

L. A. underground garage work to begin in 90 days

Contracts have been signed for construction of Los Angeles' subterranean garage beneath downtown Pershing Square. City Park Garage, Inc., one of two bidders, will begin construction in about 90 days of the two-deck, 1,650-car parking station which also will double as a bomb shelter. It is a $3,000,000 project.

Under terms of the lease the garage must be completed by Dec. 31, 1952. After 50 years the parking facility will revert to outright ownership by the city.

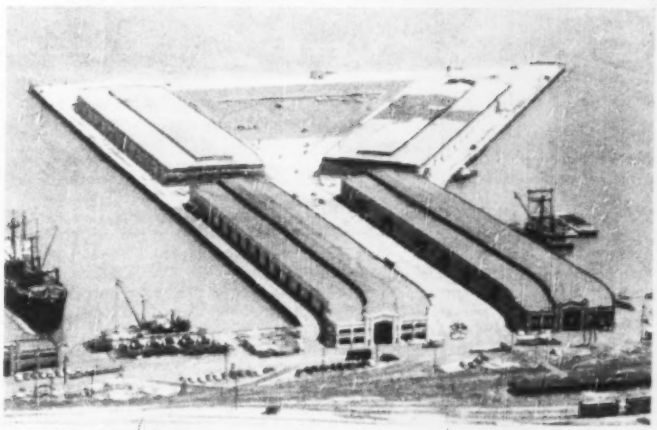
City Park Garage, Inc., agrees that the city will receive $25,000 annually, or 25% of the net income, less taxes in each instance.

A collateral contract, which guarantees the city $240,000 for the first 20 operational years, was signed by the commission with the Parking Associates Garage Corp., which will operate the facility.

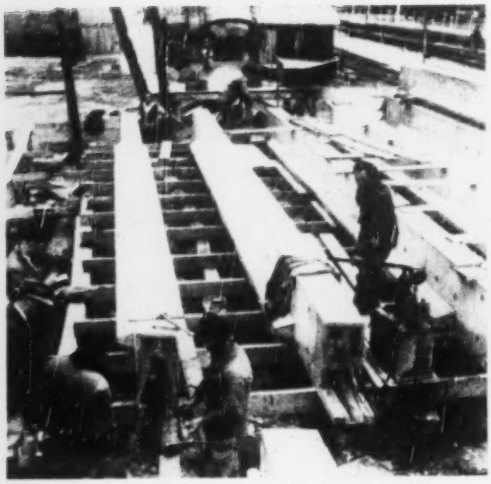
The City Recreation and Park Commission called the accepted bid the only valid offer received after several calls were made for bids. Previous offers, the commission declared, might have left the city out in the cold, financially.

Since the garage will substitute as a bomb-shelter, no difficulty is expected as far as building materials are concerned.

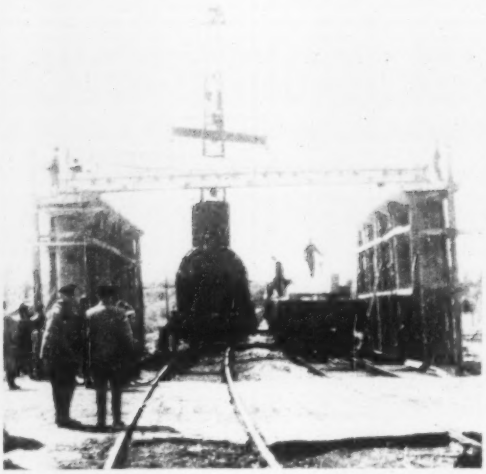
President of the City Park Garage, Inc., is Ford J. Twaits, who heads Ford J. Twaits Co., construction engineers, Los Angeles.



WE CAN USE IT.—When completed this month, this wharf will be the biggest in the San Francisco Bay Area—and just in time to handle the increased traffic flowing through the port as a result of the Korean build-up. It'll berth eight ships. Its unusual shape is due to the fact that it's built over Mission Rock. Clinton Construction Co. built the substructure, Leo Epp, Inc., the remainder.



1 PRECAST BEAMS for bridge at Neufchatel-en-Bray, France, were prestressed with double-acting jacks. Then . . .



2 CENTER SPAN, consisting of twenty-two 36-ft beams, was erected with a locomotive crane, and . . .

Cables Join Precast Beams to Form

COMPLETED LAST AUGUST, a three-span beam bridge at Neufchatel-en-Bray, France, is the world's first fully continuous prestressed concrete bridge. It was opened to traffic about two months before another note-worthy continuous prestressed bridge — a two-span structure over the Meuse at Sclayn, Belgium (ENR Mar. 24, 1949, p. 20).

Built on a slight skew, the French bridge carries a 30-ft wide highway over a small river, a double-track railway and a secondary road. It consists of two 54-ft side spans and a 76-ft center span. Out-to-out width is 43 ft, and depth excluding surfacing varies from 1.81 m at the abutments to 2.81 m over the center span.

• Beams precast. Each span consists of 22 beams, precast separately and prestressed to carry their own weight as simply supported beams. The prestressing was accomplished by tensioning 12 6-mm (Freyssinet type, cable) (ENR Sept. 1, 1949, p. 185). Shielded in bituminous paper, the cables had been placed in the formwork before the concrete was cast. The concrete was made with rapid-hardening cement and had a 7-day strength of 6,000 psi. Four days after concreting, the cables were stressed and grouted.

In constructing the center span, use was made of the railroad tracks being realized. A locomotive crane, riding on one of the tracks, erected the structural members.

Beams for the side spans were cast on the approach ramps and then slid, one at a time, into position. They were supported over the span by a steel girder, which was mounted on bogies that enabled it to be moved across the width of the bridge.

Once all beams were in place, the small spaces between the flanges of adjacent beams were concreted. After the concrete had hardened, part of the transverse prestressing was carried out by the tensioning of cables that had previously been threaded through holes in the beams.

• Prestressing for continuity. Next, continuity was introduced in an ingenious manner through a further series of prestressing. Blocks containing Freyssinet anchorage cases were cast between the side spans and at a distance from the abutments equal to four-fifths the span. At these points, the section of each beam changes from a rectangular flange to a thin web at the bottom. When the blocks had hardened, the transverse cables in the center span were pre-stressed. Longitudinal prestressing cables were then threaded through the end blocks and the center span to the end blocks of the side spans. Then the cables were tensioned. The bridge was complete, except for handrails, pavement and 2-in. thick asphalt road surface. This stage was reached in July, 1949. The Sclayn bridge is reported to have reached a similar stage in Sept. 1948.

The French bridge was opened to traffic in Sept. 1949, and in November it was officially tested by the French highway and bridge authorities. [illegible] of these tests, [illegible] at the Société Technique [illegible] Application de la Précontrainte, [illegible] very close [illegible] predictions.

Designed by [illegible] and engineered [illegible] built by the Entreprises M[illegible] at Rouen.

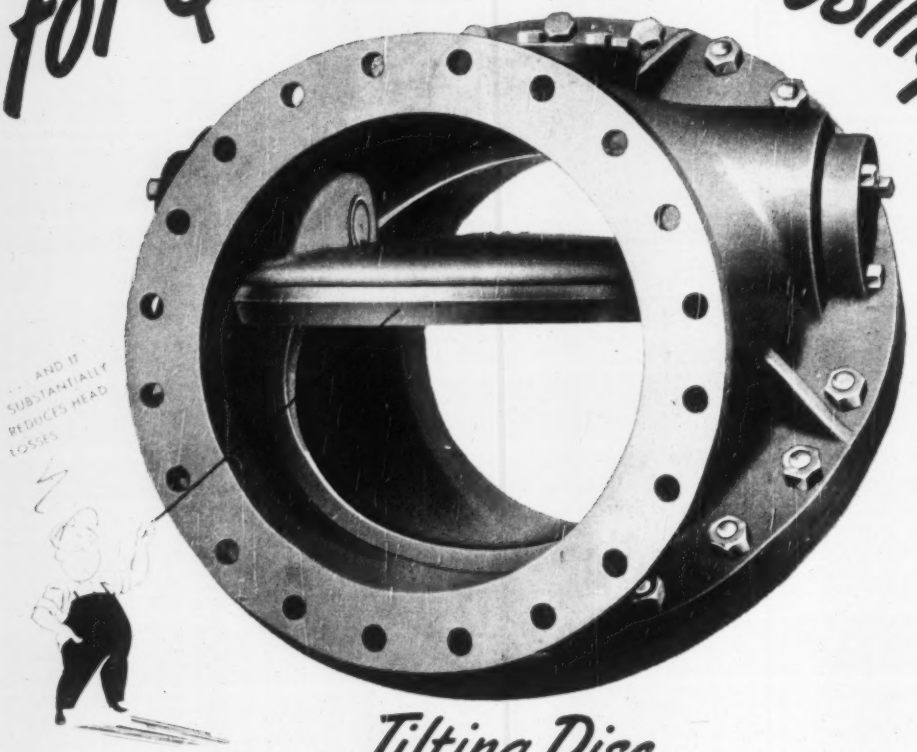
3 SIDE SPAN, consisting of 59-ft beams, was cast on the approach and slid into place. Finally

4 COMPLETION STAGE was reached after the beams were prestressed transversely and for continuity.

First Continuous Prestressed Bridge

5 CONTINUITY was achieved by tensioning cables and anchoring them in blocks cast between side-span beams. Spaces between beams in central portion of bridge were concreted in two stages—before and after continuity prestressing.

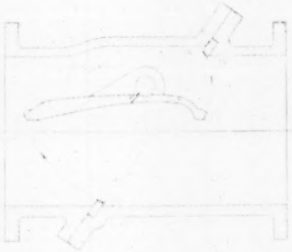
For Quick, Quiet Closing...



USE CHAPMAN *Tilting Disc* CHECK VALVES

You get truly cushioned closing with these tilting-disc check valves. There's no slamming. Instead, the disc rides smoothly on the flow, opens easily, closes quickly and quietly. Because of this effortless action, power costs are lower (when used on pump discharge lines) . . . maintenance costs are lower . . . operating expenses are saved in a dozen ways.

Available in either iron or steel. Write for bulletin with complete information.



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

The Chapman Valve Mfg. Co.
INDIAN ORCHARD, MASS.

Natural Gas

Its Boom Is Big Business For Contractors

PIPE ITSELF accounts for a third or more of pipeline cost. In mill, inspector rides a dolly in 30-in. pipe, taking a final look at inside seam weld. (U. S. Steel photo)

EXPERIENCED New York sidewalk superintendents gaped a few weeks ago when they looked across the Hudson and saw a new outside pipe snaking down the Jersey Palisades toward the river's edge.

Natural gas was coming to the biggest city at last.

Now the construction watchers could witness a type of work that had been going on in the Midlands for two decades, that has boomed at a 15,000-mile-a-year rate since World War II; and that entailed three-fourths of a billion dollars worth of construction in 1949.

Today, gas pipeline construction is in the public eye because natural gas is the cheap, abundant fuel that is freeing people from fear of great coal strikes, higher coal prices. Homeowners get a lot of this gas for heating and cooking and also as gas-electric power; industries take more for many heat-using processes.

The chemical industry goes a step further, by using the gas pipelines to transport raw materials for a whole series of synthetic products. These products are made from certain hydrocarbons that are stripped from the gas at any point along the line where there's a chemical plant for the purpose. Hydrocarbon removal does not impair heating properties of the gas.

The gas also has potential as a source of electric energy. One Gulf Coast Texas industrial plant produces 120,000 kw of processing power with gas-fueled engines.

The Texas and Louisiana Gulf area is the source of most gas—a good reason why the middle U. S. became the first market area and the first gas pipeline construction area. Since the war, however, pipeline construction has gone both east and west.

With this expansion has come a rash of superlative inch-names for the lines. Thirty-inch lines, outdoing the famous wartime Big Inch (24-in.) oil line to the east, were called "biggest inches." Then a 34-in. line was started for distribution in California; bigger than the biggest, it was called the "super-inch." Now there are "safest inches," "toughest inches," and many others.

• **Heavy steel users**—Pipeline construction in its present volume represents a substantial demand on many branches of industry. The demand on the steel industry probably is the most important—as much as one-tenth of steel going into one mile of line. Work progress must often is paced by pipe deliveries, the supply rarely meeting the tune demand these days. Northern mills produce at capacity, and by the end of 1952 two new mills will go into production in Texas.

The construction machinery industry also has a stake in pipelining. Most of the machine needed for the work are conventional construction types. Heavy crawler tractors dominate every equipment spread; the pipelayer's expansion for cold construction country. But special devices catch the visitor's eye.

Making these special devices has become a new, minor phase of Southwestern industrial development. At least ten manufacturers in that area are in on it, some producing complete lines of special machines such as pipe cutters, beaders, line up clamps and inside reamers. Others make only lighter weights, which clamp on pipes for overcome buoyancy in submerged river crossings.

• **Major projects**—New pipelining projects make construction news regularly. Perhaps the most spectacular is the 1,540-mile Texas-New York line (the cause of New York sidewalk superintendent's amazement). Building as a single-package project at a cost of more than $250 million, the line was started in 1949, will be placed in service soon after the difficult Hudson River crossing is made. Meanwhile, many long lines, loops and laterals go in all over the country. One source listed almost 250 projects under way or planned in 1949. These projects belong to 65 owners and range from 7 to 1,540 miles in length. One of the

latest projects, recently let to contract, is a 1,400-mile 30-in. line, from the Gulf Coast to Chicago, for Peoples Gas, Light & Coke Co. of that city.

A mile of line may cost $35,000 or $100,000, depending on conditions, but a rule of thumb is that a mile of line will cost $2,000 per inch of diameter.

• **Number of contractors**—How many contractors share the pipeline business? The best answer probably has been supplied by Frank Chilson, assistant general manager of Fish Constructors, Inc., Houston. This firm is building the Texas-New York line for Transcontinental Gas Pipe Line Corp. Needing to let many contracts at a time for the line, Mr. Chilson has contacted just about every qualified pipeline builder. He says there are 25 major contractors, 50 minor ones.

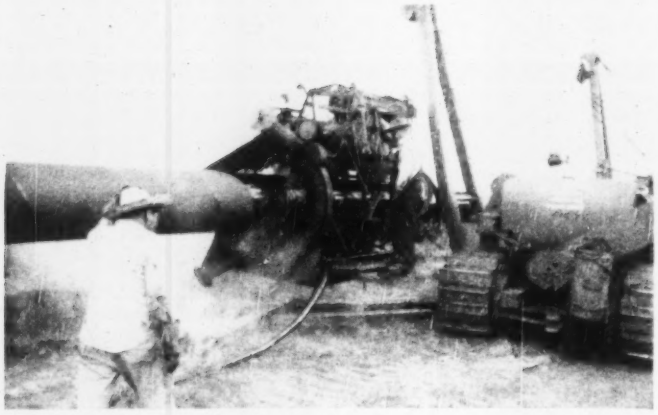
A contractor can't be too minor, though, because he must have upwards of $750,000 worth of equipment for a single "spread." And he'll spend $5,000 to $10,000 a day while he's working. Contracts normally are let for 40-80-mile lengths, the distance depending on the spacing of compressor stations where line pressure losses are made up; a station usually boosts pressure from under 500 psi to 700 psi or more. A contractor will put one spread on the line, expecting to make one mile daily; progress where the terrain is not difficult.

Some contractors run double spread a long contract. However, double spreading probably would not pay on short contracts because of equipment moving cost per mile of pipe installed. Owners figure that contract lengths less than 40 miles are too confining.

• **Construction procedure**—When a spread of equipment gets on location, crews clear right-of-way for a width of 50-75 ft, depending on the size of equipment to be used. Trucks distribute pipe, and sections are bended as done preparatory to welding.

For welding, pipe ends are butted face-of-contact (face square) and lined up. Clamps are put on, cutting lengths, so that finished girth welds will not be expected to fall on

Next, welding crews, from several hundred to a few thousand feet long, get down to the coating line, which, together with auxiliary machines that move along with the pipe. One is a cleaning and priming machine and the other is a coating and wrapping machine. The former machine, driven ahead of the coating machine, sprays primer on the outside surface of the pipe as an enamel primer. The latter machine coats the pipe with a protective coating and wraps it with protective fabric. Concrete coating, either for submerged pipe or for land pipe in which soil is corrosive, is applied by machines that encase the pipe and ride on it during the operation. Side-boom tractors travel with the machines, holding pipe ready for coating. As pipe is coated it is lowered into the ditch. Sections are joined by welding.



SPECIAL MACHINES combine with conventional construction types on pipeline jobs. This is a coating and wrapping machine in action, on the King Ranch in Texas. Vapor comes from hot "dope." (ENR staff photo)

TOUGH GOING is old stuff to pipeliners, many of them weaned on oil-field gumbo. A ticklish lowering-in job here involves threading new pipe under an existing one in Tennessee. (International Harvester photo)

RIVER CROSSING, WET—Side-boom tractors walk with weighted and slatted river pipe while winch tractor on other side pulls pipe into trench in bottom of Alabama's Tallapoosa River. (Jones & Laughlin photo.)

RIVER CROSSING, DRY—The 34-in. "Super-Inch" splits into two 26-in. lines to cross California's Mojave river in a dry wash. River weights and plenty of cover will protect lines from Mojave's flash floods. (Bechtel Corp. photo.)

into the trench. On the bottom, the pipe rests on soft earth pads, to prevent damage to weighting. It then is carefully covered or backfilled before final machine backfilling.

These procedures are modified by terrain conditions, of course. Rock excavation may be encountered, where upon depth of cover is reduced to a little over a foot, and coating protection may be improved by banding on wooden slats or Dacy board.

• **River crossings**—One special condition that is practically a separate part of pipeline construction is river crossing. Some contractors have specialty subcontractors who do almost nothing but river crossings. Engineering organizations, too, have specialty groups. Even the choice between overhead and under-bed crossings is partly a matter of preference. And in under-bed crossings some engineers prefer to protect and weight down normal weight pipe; others prefer to use heavier pipe having negative buoyancy.

• **Engineering criteria**—A few engineering criteria have been mentioned. In swamps the earth cover over pipes is increased to 42 in.; in small streams, 4.5 ft; in big streams, 10 ft; but Hudson River crossing cover will be 25 ft. Where pipes go into rail and highway embankments, pipe wall thicknesses may be increased and the whole sealed in a casing with 5-ft cover.

Bends of one degree curvature can be made in large-diameter pipe by ordinary lowering-in stresses. Greater bends, up to 20 deg, can be made in the field by special tractor-mounted equipment; shop-bending or specials must be used for greater curvatures.

Although most large-diameter pipe coating is done in the field, there is a choice between field and yard coating, the latter being more economical as pipe size decreases. A yard-coating operation was described in ENR, Mar. 3, 1949, p. 42.

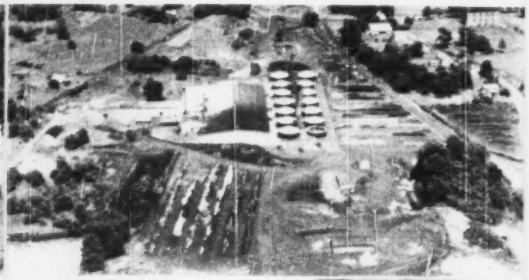
One other yard operation—double jointing—is used by a few contractors. These contractors say 15-20 percent output is gained by joining two 31½-ft lengths in roller rigs. Among other advantages they have found that trucks can deliver 63-ft pieces to most locations almost as easily as they can deliver 31½-ft pieces. Yard equipment is portable, so yards are moved periodically to maintain economic haul-line haulage distances.

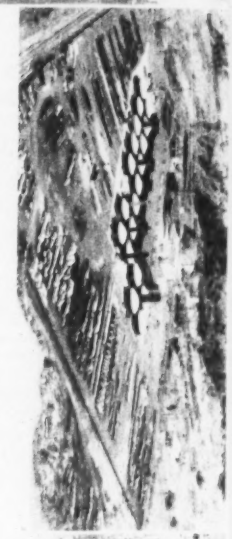
Double jointing also may be done in the field, the basic advantage in each case being that the pipe can be rolled for all downhand welding. Automatic welding machines now are available only for yards, whereas a satisfactory line automatic machine is still a pipeliner's dream.

• **Location criteria**—While contractors strive for more efficient machines, engineers build up experience in the economics of pipeline location.

Keys to location are: (1) suitable river crossings; (2) suitable compressor plant sites; (3) mountains, swamps and cities to be avoided. As in rail and highway work, a straight line is not necessarily the cheapest distance between two objects although pipelines can stand steeper grades depending primarily on the grade's feasibility for construction equipment use. It is necessary to hit streams and steep hills squarely primarily to avoid erosion trouble, but in the case of crossings also to reduce the length cost. The choice of going over a hill or around it depends on relative construction cost, with little taken into account for line maintenance and inspection.

Because of its length, the 1,840-mile Transcontinental line is a masterpiece of location. The line arcs around the Appalachians, through Georgia and up the Atlantic coastal plane. The location on the resulting easy gradient is 100 miles longer than the straight line distance, but on a cost-equivalent basis it is 75 miles shorter.





It Pays Always

TO DO BUSINESS WITH UNIVERSAL and UNITED STATES CONCRETE

Immense capacity in quality vitrified and concrete pipe in complete size range, and in wide range of other vitrified products. Seven factories, with every technological and production advantage, serve you. There are research and testing laboratories, practical plant and sales engineers, skilled factory and office personnel and experienced management. Pricing is competitive and advantageous. Business dealings are efficient to win and to hold accounts.

Check with us . . .

Visit us . . .

Use Our Products and Service

PRODUCTS

Sewer Pipe (Vitrified)	Slipseal Sewer Joint	Fire Clay
Sewer Pipe (Concrete)	Segment Block	Flue Lining
Liner Plates	Meter Boxes	Stove Pipe
Acrodrane Filter Block	Fire Brick	Chimney Tops
Tylox Rubber Couplings	Septic Tanks	Chimney Pots
	Drain Tile	Ship Lap Wall Coping

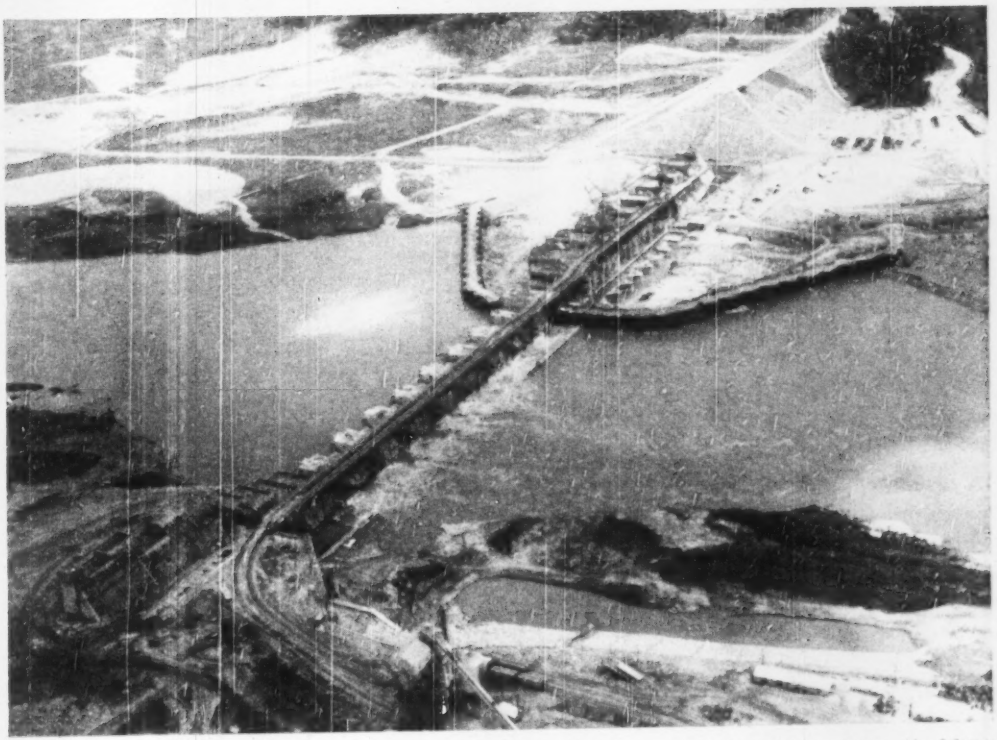
SALES OFFICES

NEW YORK, 3917 Lincoln Building, 60 E. 42nd Street, Tel. MU 7-7395
BALTIMORE, MD., Hallethorpe Branch, P. O. Box 7769, Tel. Elkridge 790
CINCINNATI, OHIO, P. O. Newton, Ohio, Box 215, Locust 7836

FACTORIES

Baltimore, Md.; Cincinnati, Ohio; New Philadelphia, Ohio; Palmyra, Ohio; 2 Uhrichsville, Ohio; 2

UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY
GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO



ALL 47 BLOCKS—except the eight over which the Savannah River is now diverted—are well along toward completion. The 2,300-ft construction trestle extends to block 45 (background). Three 50-ton revolving cranes on 32-ft-gage track handle 4-cu-yd buckets at 115-ft radius in concrete placing.

Spurt of Speed Puts Concreting Out Ahead at Clark Hill Dam

CONCRETE PLACEMENT at Clark Hill Dam hit record high stride this spring, as builders pushed production ahead of schedule in a race against the [illegible]. The peak was attained [illegible], when 98,556 cu yd went into the dam [illegible] its second construction stage. [illegible] the upstream face Augusta, Ga., and the Savannah River.

Such high production was not easily attained. Concrete could not be moved any faster than it could be made to cool. Heat of hydration was the problem as ambient temperatures rose. Along in May, as the mercury reached for 90-degree days, the content and mixing time had to be adjusted daily, even hourly, to deliver concrete to the forms at 60 degrees.

• **High production benefits.** [illegible]

• **Earlier progress.** Leading up to the heavy concreting season just finished were these highlights:

[illegible]

[illegible]

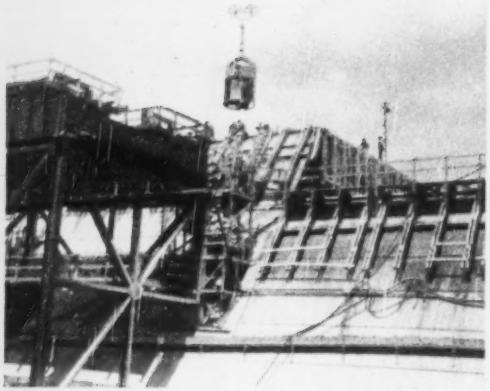
[illegible]

[illegible]

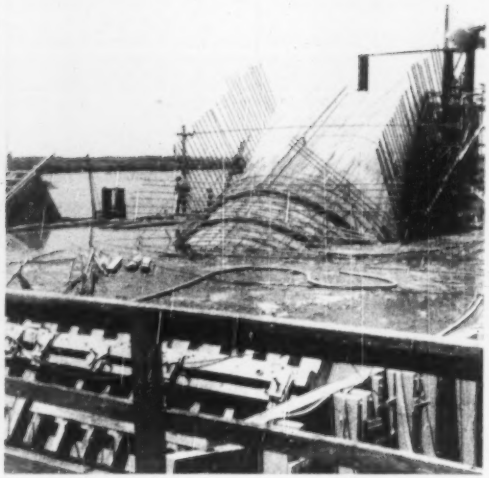
[illegible]

[illegible]

By the end of May concrete in the dam reached [illegible] ft per day.



NEAR THE TOP—Big production during late winter and spring for concreting up high where pours get smaller.



FORMWORK IS TOUGHER around the headworks. But summer is the ideal time to go light on concrete, heavy on carpentry.

• **Cooling water used**—The contractor was two months behind schedule because of late delivery of steel fabrication when he started Stage 2 concreting. So he stocked pouring for cool days in 24-hr lifts for the last 10 ft above bedrock, he was allowed by limited cooling pipes to circulate river water and place 48-hr lifts from the start.

This great importance from normal Corps of Engineers procedure, but its use conformed to the particular case, providing a still more satisfactory job that the initial dam contractor could be overcome and all the pours could be completed in summer. Results were equal to those obtained in Stage 1 placement where 72-hr lifts were required.

• **Temperature control**—Close control of materials was maintained throughout with special emphasis on temperature of concrete at the point. Even at peak ambient temperatures reached (90 degrees), ice in the mix kept concrete being placed down to a max of 60 deg F.

The idea is startling at first, but ice was fed with all the rest of the plant could make up. Above shattered ice, the salty concreting chutes of 3 men mixer to result in the fastest cooling and placing temperature possible. Ice was varied from 250 lb per 4-cu-yd batch in concrete down to 150 lb for the warmer temperatures. The heavier additions of ice required up to one minute extra mixing time beyond the 75 min usually specified to melt the ice, part in the sand and distribute the water into the batch.

• **Sand from stone**—Another economy-forcing shift during June was this. Sand in the mix was granite, ground fine and all. It kept hanging on the mixer lips before it could further, and the cycle closed a real danger of segregation.

All aggregate comes from the same plant on granite quarried here by Lunn on the Georgia shore. Aggregate plant operation closely resembles that at Bagnell Dam, described in "Sand to Stay in Stone," Mississippi Sand Origin" in ENR Oct. 6, 1949, p. 50.

By anything the ground surface at Clark Hill is far near the plant, causing the contractor to work a pulley compact straight line plant from quarry to mixing plant. Four sizes of stone run the usual crusher-screen stockpile reclaiming tunnel route. Sand is hydraulics 12-ft rod mill, then put through a wet process classifier to remove most of the #100 sieve size.

At reaches the mixer, about 5% of the aggregate is #100, after 24-min passes 12-15% of the aggregate is #100. Fineness modulus goes from 2.90 to 2.70 in the mixer, and the aggregate grades out at excessive coarse, bleeding in the mix and inferior workability.

Fine coarse, cobbles and smaller rock sizes 3, 4, and 5 are magnetically set up in pit centers. But the contractor has developed atomizers on the concrete discharging rock into stock, collect all size 4 in size. These spray a fine mist of water on rock as it drops

CLARK HILL DAM

PURPOSE: Flood and low water control; power production

RIVER FLOW:

Sept. 1929 (est.)	277,000 cfs
Aug. 14, 1940 (recorded)	201,000 cfs
Minimum flow (est.)	1,200 cfs
Av. uncontrolled flow	8,663 cfs
Av. regulated	6,000 cfs

RESERVOIR:

Length	33 miles
Shoreline	1,200 miles
Capacity	2,900,000 acre-ft

DAM:

Greatest height	200 ft
Length of concrete section	2,282 ft
Total length	5,680 ft
Spillway length	1,092 ft
No. of tainter gates	23
Gate size—width	40 ft
height	35 ft
Penstock diameter	20 ft
No. of outlet sluices	8
Sluice size—width	4 ft
height	9 ft
Volume of concrete	1,050,000 cu yd
Volume of earth embankment	3,300,000 cu yd

POWERHOUSE:

No. of units	7
Head on units	136 ft
Capacity of each at 136-ft head	40,000 kw
Total capacity	280,000 kw

COOLING—Cobbles coming off conveyor drop to stockpile through fine water spray.

into the pile, and the cooling evaporation has been found to cool the rock as much as 5 deg when relative humidity is low.

• **Ice plant**—The total refrigeration comes in at the mixing plant where ice is fed from five 50-ton-per-day ice makers. These produce 1¼-in. pellets which are stored in a 220-ton bin, conveyed to the batcher-mix pit through a crusher into mixers. Water going into the mix is cooled to about 35 degrees. The resultant mix has been kept between 50 and 60 deg with 70 deg set as the maximum allowable by the specifications.

• **Mix specifications**—Concrete for the interior of the dam has a 3 to 1 partland to natural cement ratio by volume, and in all entrainment agent is interground with the natural cement to give 4½% entrained air in that portion of the mix passing a 1¼-in. screen. Mass-concrete mixes were designed for 5-in. slump (maximum size 3 in.) with 5 sacks of cement per cu yd and 0.55 by weight water-cement ratio. Average 28-day compressive strength was found by test to be 2,700 psi.

Face concrete was made with 55 parts portland cement, 15 parts natural. A typical mix specification here was of 4.0 0.54—more cement per cu yd and lower water-cement ratio than the interior concrete. This mix had a 28-day compressive strength of 4,400 psi.

• **Concrete placement**—Mixers dump into 4-cu yd buckets on dual-skip dual-cars riding standard gage tracks out to the steel construction-trestle. There a big revolving crane, riding this trestle, swings the buckets out to the point where concrete is electrically vibrated and cured under a water spray system. There is a minimum of five days between pours—usually longer due to the 5-day work week.

Horizontal construction joints are scrubbed with high-velocity air-water jets before a new lift is poured. Upstream and downstream faces are water-cured for 28 days. Bulkhead-type metal-frame-veneer Quabbin concrete and formwork are producing smooth, dense exterior surfaces.

Bid price of mass concrete was $12.00 per cu yd in place plus cost of the cement. Reinforced concrete in walls and ducts up around the headworks where formwork is intricate is listed at $29.50 per cu yd—again, exclusive of the cost of cement used.

• **The work ahead**—Closure at Clark Hill is scheduled to start Sept. 1 and continue through the fall when rain fall and runoff are lowest. Eight low blocks will be brought up in 2½- and 5-ft lifts poured behind watertight bulkheads until head developed over the dam's eight 100-ft sluices results in passage of the river's entire flow.

No contract has been awarded as yet for the powerhouse. This will house seven 40,000-kw units, and all are to go in at once. The present $26,420,000 contract is to be completed Jan. 25, 1952. Ultimate cost of the entire project is estimated to be $76,000,000.

Clark Hill Dam is the key Savannah River project. Ten others were approved for the basin under the Flood Control Act of 1944. One of these, Hartwell, has been authorized, but no funds have been appropriated.

Allatics Constructors Inc. is prime contractor on the job. This firm is a consortium made up of Walsh Construction Co. (operator company), Ralph E. Mills Co., Blythe Brothers Co., J. A. Jones Construction Co., B. Perini & Sons, Inc., and Missman Construction Co.

C. D. Riddle is project manager, Steve C. Richards, project superintendent, and T. F. Taylor, job engineer, for the contractor.

For the Corps of Engineers, Lt. Col. Robert Erlenkotter is district engineer, and Fred W. Facey, Jr. is resident engineer. A. C. Marine is assistant resident engineer and W. T. Neelands, materials engineer. Charles T. Main, Inc., Boston consulting firm, did the design under supervision of the Corps of Engineers.

Tidal Knowledge Evaluated

Clarification of the complexities of tidal hydraulics and related phenomena, always a problem for engineers engaged in channel and shore protection work, is being attempted by the Committee on Tidal Hydraulics established by the Chief of Engineers in the fall of 1945. The committee is composed of seven staff engineers of the corps who have had wide experience in designing and maintaining navigation channels and shore protective works. They are Clarence P. Welker, chairman; Joseph B. Tiffany, recorder; Berkeley Blackman, Richard O. Eaton, James R. Johnston, Martin A. Mason, Oscar Rosenzweig.

A primary objective of this study is to improve channel design in tidal waters so as to reduce shoaling or limit it to specific areas, thus minimizing the expense of maintenance dredging. Channels with the best self-maintaining characteristics can be provided only if the designers properly evaluate the interrelationship of channel cross section, flow, tidal effects and regulating works.

Committee members already have reviewed and correlated the results of nine independent studies to determine the extent of present knowledge and to find out what aspects of the subject need further investigation. This work is continuing. From the ground work, the committee will determine and exercise technical supervision over programs of model study, investigation and research designed to provide the knowledge necessary to arrive at adequate solutions for the engineering problem connected with tidal phenomena.

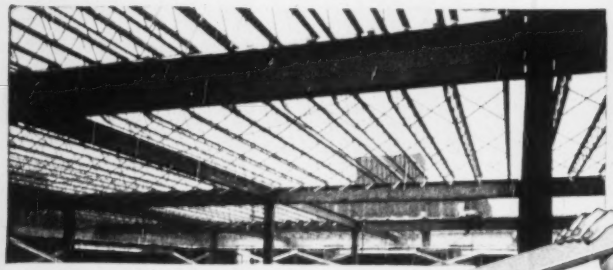
Report No. 1—"Evaluation of Present State of Knowledge of Factors Affecting Tidal Hydraulics and Related Phenomena," has been published and distributed to institutions and organizations known to be interested in the subject. Copies may be obtained from Joseph B. Tiffany, recorder, Committee on Tidal Hydraulics, Waterways Experiment Station, P. O. Box 631, Vicksburg, Miss. Price, $1.

Comment on Report No. 1 is invited by the committee as well as contributions of data pertinent to the study.

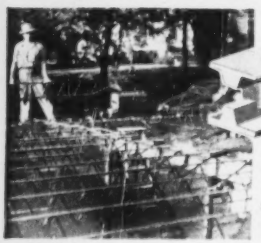
TRUSCON
MARK OF MERIT PRODUCTS

TRUSCON "O-T" STEEL JOISTS

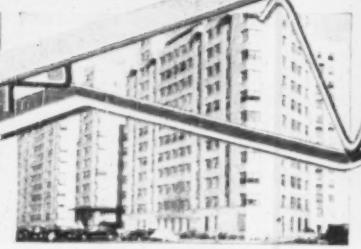
light and *strong*



Truscon "O-T" Joists used for Roof Construction



Truscon "O-T" Joists are easily and quickly placed in position.



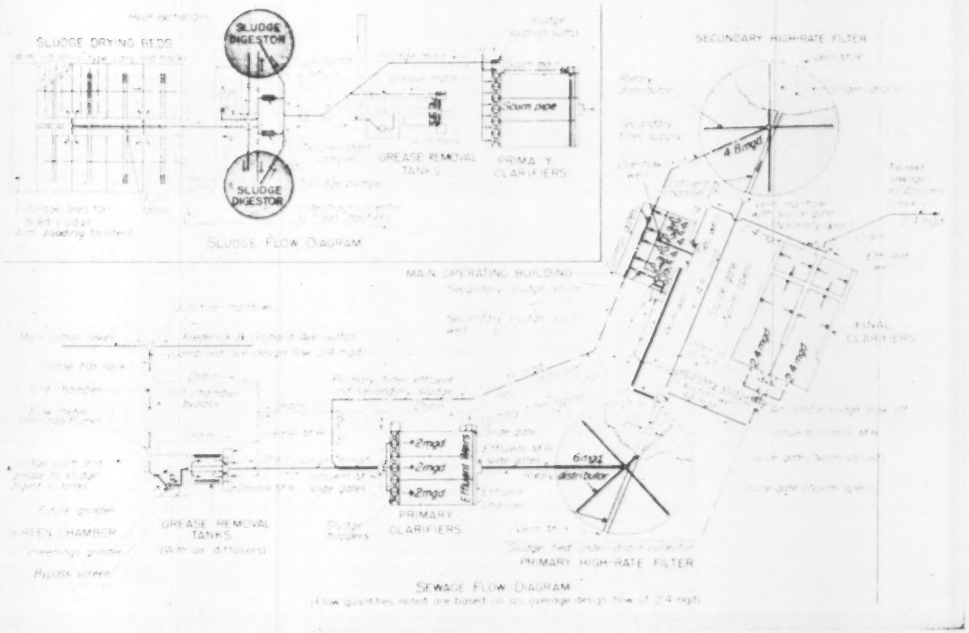
Truscon "O-T" Joists used in 2600 Parkway Apts., Philadelphia. Aaron Kaish, Archt.

. . . conducive to economy

Assure your buildings the welcome freedom from excessive weight. Protect them against the aches and pains of undue physical stresses. Plan with Truscon "O-T" to get Optimum Trajection — the most efficient carrying ability ever designed into load-bearing units! • Note the distinctive construction of the Truscon "O-T" Open Truss Steel Joist. Features: Great rigidity through integral welding of wide tee-shaped top and bottom chords and a strong, round continuous web member. High fire resistance. Simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is "place-marked", greatly simplifying and speeding construction. Write for illustrated literature giving complete details.

FREE Book on Truscon "O-T" Steel Joists. Write for it. The Truscon Steel Company Manufactures a Complete Line of Steel Windows and Mechanical Operators . . . Steel Joists . . . Metal Lath . . . Steel-deck Roofs . . . Reinforcing Steel . . . Industrial and Hangar Steel Doors . . . Bank Vault Reinforcing . . . Radio Towers . . . Bridge Floors.

TRUSCON STEEL COMPANY
Subsidiary of Republic Steel Corporation
YOUNGSTOWN 1, OHIO
Warehouses and sales offices in principal cities

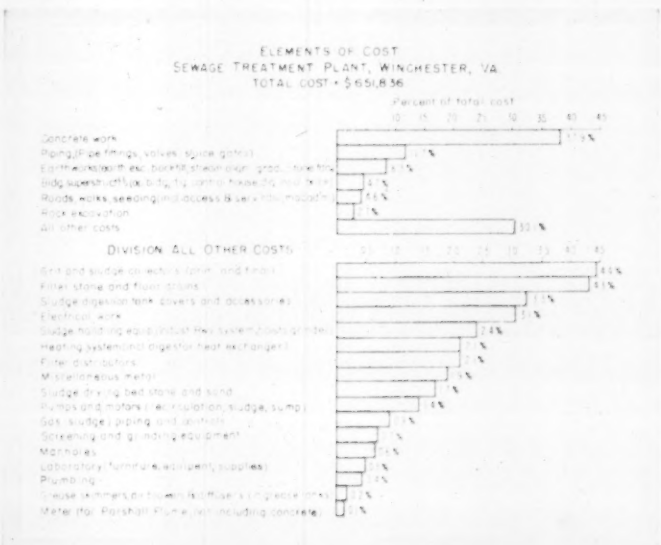


FLEXIBILITY of operation and reliable high-quality treatment are obtained in the two-stage biofiltration sewage plant.

What Can You Learn From a Sewage Project?

• Performance summaries • Unit Operating Costs • Construction-cost breakdown

M. H. Klegerman
Consulting Engineer
Alexander Potter Associates
New York, N. Y.


ELEMENTS OF COST
SEWAGE TREATMENT PLANT, WINCHESTER, VA.
TOTAL COST = $651,836
Percent of total cost
Concrete work
Piping (Fittings, valves, sluice gates)
Earthwork (cut, exc. backfill, shoring, grad., trucking)
Bldg. superstructure, brickwork, roofing, heating, etc.
Roads, walks, seeding and access drives, misc.
Rock excavation
All other costs
DIVISION "ALL OTHER COSTS"
Grit and sludge conveyors (scrn. and trash)
Filter stone and filter grates
Sludge digestion tank covers and accessories
Electrical work
Sludge handling equipment (not heat system) (covers, grates)
Heating system (incl. digestor heat exchanger)
Filter distributors
Miscellaneous metal
Sludge drying bed stone and sand
Pumps and motors (exc. aeration, sludge, sump)
Cast sludge piping and controls
Screening and grinding equipment
Manholes
Laboratory furniture and chemical supplies
Plumbing
Metal (for Parshall flume, incl. concrete)

CONCRETE WORK eats up the greatest portion of the cost of a sewage-treatment plant. Are new structural ideas called for to get lower costs?

Marking the beginning of an intensified pollution-abatement campaign in Virginia, a 2.4-mgd biofiltration sewage-treatment plant at Winchester was put into operation last March. With a maximum capacity of 6.0 mgd, the plant features a high degree of treatment with provision to handle heavy organic industrial wastes and meager effluent dilution. It is designed for an equivalent population of 30,500 of which 16,000 represents design resident population.

Accurate records of plant performance and operating costs are being kept. When these are placed beside design statistics, the industrial waste charge schedule and an index of construction costs, it should be possible to get a well-rounded appraisal of what Winchester is receiving for its investment. In brief, here's the story:

• **High-quality effluent.** During the

shakedown operating period, the plant has performed up to expectations. BOD and suspended solids removal are about 92 and 85%. These results are typical under present conditions and loadings. No analytical data on plant efficiency under the heaviest fruit harvest waste loadings are available. The amount of residual BOD in sewage at various stages of treatment may be of particular interest (Table I).

• Cheap at twice the price—The people of Winchester are fortunate. They're getting excellent sewage treatment for only 1¢ per day per capita. This is based on a present connected population of 14,500.

Operating costs based on the initial three months' operating period are reported in Table II. Operation over longer periods will, of course, introduce some additional costs due to maintenance needs. Labor costs will increase but slightly even when daily volume treated is substantially increased. Unit cost per capita will, therefore, not change perceptibly.

• Investment—Contracts for construction of the Winchester plant were let in April 1948 at ENR Construction Cost Index equaled 445. Costs of the completed project are:

Lateral sewers	$ 57,400
15,000 ft of 8- and 10-in. VC (sewer)	
Main outfall sewer	117,855
11,500 ft of 24- and 27-in. VC pipe)	
Treatment plant	651,795
Total project cost	$827,050

• Economic analysis—Elements of cost of the treatment plant subdivided into principal construction and equipment items are presented on the bar graph. Heavy construction items (sewers, tanks, piping, although buildings and much roofing, for almost 70% of the total cost. Despite popular fear, sewage treatment projects do not have to be expensive.

The most important cost item is the comminutor, at 8.2% of the total.

The principal equipment item is represented by the grit and sludge collectors. These are 4.2% of the cost. The sewage flow meter, with recorder, totalizer, and transmitter indicating, installed and wonder-working, is the item of least cost.

• Industry pays its way—Most of the city's industries are connected to the sewerage system. Discharge of industrial wastes is controlled by ordinance. It establishes limits for pH and temperature, requires pretreatment of waste outflows, prohibits discharge of bactericidal substances and demands periodic chemical analyses of all wastes.

Industry pays for treatment and disposal service. Charges are computed by an established formula, locally referred to as the "incentive method." Basically, industry's service charges are related to volume, BOD and suspended solid contents of their wastes. The formula, which was worked out by S. B. Reeves, superintendent of water and sewers, is:

$$I = \frac{300 - R(S - 150) - (B - 250)}{281}$$

in which:

I = the factor

R = ratio of use

S = suspended solids (ppm)

B = 5-day biochemical oxygen demand (ppm).

The factor thus derived is multiplied by the cost per million gallons for total collection and treatment of all sewage and wastes of the city to determine the rate per million gallons for an industry. This rate is then applied to 80% of the water used by the industry. (Ratio of use is the city's total industrial water.) BOD in pounds to plant design BOD.

The formula makes it possible for company managers to compute their waste service costs in advance of payment. They can, moreover, determine the effect on such charges of varying any one or more of the three constituents of the waste. This neatly enables the managers to evaluate the influence of new plant equipment or process changes on cost of disposal service. Hence the term "incentive method."

• Reasons for process—Two-stage bacteriation for treatment of the sewage and industrial wastes was adopted because of:

1. Need for maximum removals of organic pollutants at all times.

2. Greatly fluctuating industrial load and marked variations in sewage characteristics.

3. Ability to provide flexibility in recirculation ratios. The normal ratio for eight months can be increased during the apple waste period when pollution loads are a maximum.

4. Hydraulic limitations imposed by site topography.

• Treatment's complete—The bacteriation plant includes a grit chamber, Parshall flume, comminutor, two preaeration tanks for grease separation, three primary clarifiers, two high-rate trickling filters, a pumping station for recirculation, and two final clarifiers.

TABLE I—TYPICAL OPERATING DATA
(Week of April 24, 1950)

Average flow	1.46 mgd
pH influent	7.3
pH effluent	7.5
Recirculating Ratios	
primary filter	2.5
secondary filter	1.7
Flow to Settling Tanks	
To primary tanks 1.46 mgd + 2.5 (1.46)	5.12 mgd
Primary-tank detention	1.76 hr
Primary-tank settling rate	1,220 gal per day per sq ft
To Final Tanks 1.46 mgd + 1.7 (1.46)	3.94 mgd
Final-tank detention	2.54 hr
Final-tank settling rate	515 gal per day per sq ft
BOD	
Raw sewage	217 ppm
Primary-tank effluent	89 ppm
Primary-filter effluent	65 ppm
Final effluent	15 ppm
Overall BOD reduction	93.0%
Suspended Solids	
Raw sewage	194 ppm
Primary-tank effluent	42 ppm
Final effluent	30 ppm
Overall suspended-solids reduction	85.0%
Filter Loading (BOD) Including Recirculated Flow	
Primary 5.12 mgd × 89 ppm	3,800 lb
Secondary (1.46 mgd × 65 ppm	2.48 mgd × 15)
	1100 lb

TABLE II—OPERATING COSTS

(First 3 Months' Operation)

Electric power cost	
Labor cost	
Other costs	
Total Cost	
BOD Removed per mg	
Suspended solids removed per mg	
Cost per ton BOD removed	
Cost per ton SS removed	
Cost per capita connected population	

TABLE III—SIZE OF PRINCIPAL PLANT UNITS

Grit chamber	
Parshall flume	
Screenings grinder	
Grease-removal tanks	
Primary clarifiers	
High-rate filters	
Final clarifiers	
Sludge-digestion tanks	
Sludge-drying beds	

(All depths refer to liquid depths)

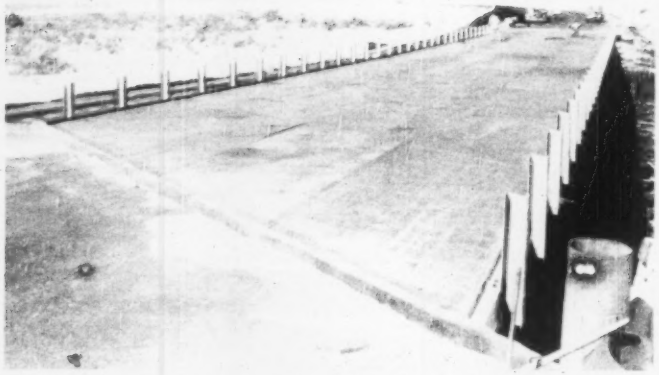
TABLE IV—TREATMENT PROCESS DESIGN DATA

Ave. design flow	
Max. design flow	
5-Day BOD (except during fruit season)	
5-Day BOD (during fruit season)	
Filter loading* (except during fruit season)	
Filter loading (during fruit season)	
Primary clarifier	
Final clarifier	
Digester capacity	
Sludge-drying beds	

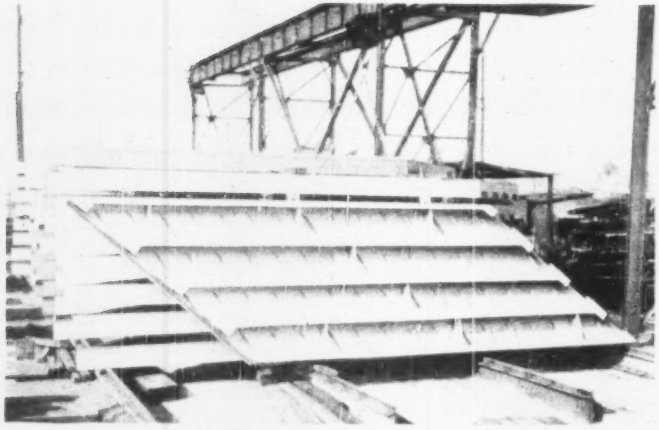
$$\left(\text{Ex. } \frac{\text{Settling area}}{\text{Ave. sewage flow}} \right)$$

* Explained in Reference [illegible] (see Table)

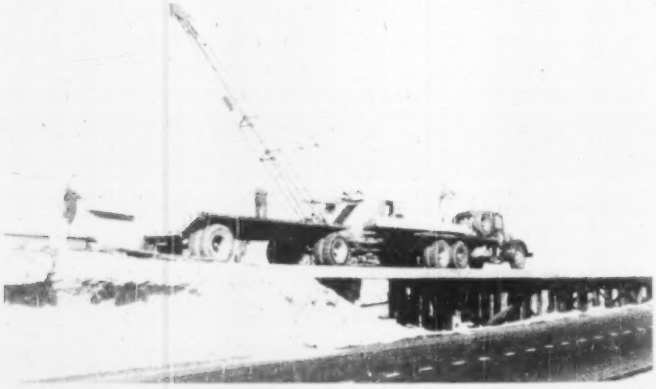
Steel Panels for Desert Bridge Deck



THREE DAYS were required to install these 48 steel panels for a 230-ft desert bridge deck. A 2- to 4-in. wearing coat of bituminous mix will top the steel panels.



PANELS were 7x19 ft. Deck plate was ⅜ in. thick. Individual panels are all-welded, then bolted together to form deck. Entire assembly weighed less than 3 tons.



EQUIPMENT operating on panels already in place easily installs the bridge deck.

Made for each other!

... Like ROCKMASTER Split-Second Detonators and ATLAS Explosives

Like ball and bat, ROCKMASTER split-second detonators and Atlas explosives just naturally *go together*. And fitting like a *glove* with them is the method of loading, tying all together with a *system*.

Gear the *right* choice of these famous Atlas explosives with the *right* combination of the 16 available Rockmaster split-second detonators—add the proper balance of drill pattern and blast-hole loading—and you have the true ROCKMASTER BLASTING SYSTEM. Here's the original split-second delay blasting method . . . the system that has given such outstanding results in terms of better breakage, better control of over throw, and minimum noise and vibration.

What you want to accomplish on a particular job controls the choice of detonators, the drill pattern, and which of these well-known Atlas explosives is best suited to the job:

GIANT GELATINS
For all but the most severe water conditions. High strength per pound—shattering action.

GELODYNS
Exceptionally economical to use where water conditions are not severe.

ATLAS EXTRA DYNAMITES
Excellent all-purpose explosive for outdoor work.

AMODYNS
High cartridge count, economical explosives for comparatively dry conditions.

APEX
Especially formulated and packed for quarrying and stripping. Excellent for large-diameter blast holes under most conditions. Available in 8 strengths—low, medium or high velocity.

COALITES
Permissible explosives. Available in variety of strengths and velocities to give desired lump sizes under widely different conditions.

Best results are obtained with Atlas detonators and accessories. For the most economical explosives for use in gassy mines, use Atlas Coalites and Rockmaster "16".

ROCKMASTER GELODYNS, AMODYNS, APEX COALITES Atlas E & P Caps

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

NEW International 6-wheel Trucks

give you balanced *Heavy-Duty Engineering*

America's most popular heavy duty trucks now come to you in new 6-wheel models, ranging in GVW from 22,000 to 45,000 pounds.

The International models in this complete new line are all outstanding products of balanced heavy-duty engineering. This means that every model is carefully balanced for lower operating costs, for longer truck life, for better all-round operation.

You get the proved heavy-duty engineered value that has kept International first in heavy-duty truck sales for 18 straight years. You get traditional stamina plus new operating economy, new comfort, new ease of handling.

You can see proof of heavy-duty engineered stamina in the new frame, new bogie, and new spring-and-saddle assembly. You can see proof of operating economy in the combustion chamber design of the new Super Blue Diamond and Super Red Diamond power plants. You can see proof of super-comfort and super-visibility in the new Comfo-Vision Cab "roomiest cab on the road" . . . proof of steering ease in new Super-steering.

And that's not all. You can see proof of the advanced nature of this new balanced engineering throughout every 6-wheel model. One typical example is the new third differential. This new differential takes the place of the power divider, eliminates need for an extra propeller shaft, and makes practical shorter 6-wheel units.

Get the complete story about these new 6-wheel versions of America's most popular heavy-duty trucks. Find out why they mean more money in YOUR pocket. See your nearest International Truck Dealer or Branch.

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors
Motor Trucks . . . Industrial Power
Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars"
NBC, Sunday afternoons.

ALL NEW, ALL PROVED

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

READER COMMENT

Prestressing Bars Bonded

Sir: In ENR June 22, p. 41, you infer that the high-tensile steel bars are not grouted in for the Lee McCall system of prestressing. This, I take it, is merely a slip in summarizing the technical data about this system. It is well known in this country that we fully grout in the bars in all but a few special cases, and for these special cases, the loss of design is scaled to correspond.

It is, of course, true that the high efficiency unit we have developed will withstand the ultimate stress that can be put on the bar. In other words, notwithstanding the threading, the threaded part of the bar and the special nut develop the full strength of the plain unthreaded bar. So there is, therefore, no need for grout to be used to assist in obtaining the full strength of the end anchorage. Nevertheless, when overloaded up to failure, the grouting in of the bars results in a greatly improved performance.

DONAVAN H. LEE
Consulting Engineer
London, S.W.1, England

Better Asphalt Pavements

Sir: In the article "Better Asphalt Pavements Produced by Proper Handling of Plant Mixes," by N. M. Finkbiner, Engineer of Materials, Oregon State Highway Commission, (ENR July 13, p. 57) the following paragraph appears:

"As previously mentioned, fast rubber-tired traffic soon demanded nonslippage surfaces. One early answer was to roll stone chips into the surfaces of dense-mixed pavements immediately after the initial rolling. These chips were used either uncoated or coated with asphalt and applied to the finished surface at the rate of from 5 to 20 pounds per square yard, but the method was not very successful. Now the best method is to build the non-skid character at the road into the mix 'open mix'."

This paragraph infers a conclusion to which we are absolutely opposed to all non-skid tests and conclusions drawn therefrom over extending over two decades that it appears necessary to again point out the error of this line of thought.

R. A. Moyer, while professor in highway engineering, Iowa State College, carried on extensive skid tests over a number of years which proved that sheet asphalt pavement—a mixture of asphalt and sand ranging from 15 to 40% more non-skid than any other pavement on the market. This is, of course, NOT an OPEN MIX.

In spite of the fact that no research since has even questioned Prof. Moyer's findings and further that the screen tests of Oregon's non-skid mixture as given by Mr. Finkbiner will not produce, in any sense of the word, an "open mix," I deem it important that this "open mix" interpretation be corrected.

TROY CARMICHAEL
Highway Engineer
Montana State Highway Commission

Sir: Owing to the absence of Mr. Finkbiner because of illness, I am taking the liberty of commenting on the letter from Troy Carmichael in which he discusses a portion of the article "Better Asphalt Pavements Produced by Proper Handling of Plant Mixes."

It is believed that Mr. Carmichael's criticism of the term "open mix" will be found not valid when his quoted paragraph is considered in context with the paragraphs following in the article.

These paragraphs state that the Oregon non-skid mix consists entirely of material passing the 2-in. screen and is considered "open" because it possesses a high void ratio when compared to our so-called dense mixes. It is even evident that a mix of this grading will provide the sandpaper finish found to be one of the most non-skid in the Moyer report.

It should be pointed out that the term "open mix" has reference to the amount of void content and is in no manner predicated upon individual void size.

G. W. HARRY
Assistant Engineer of Materials
Oregon State Highway Commission

Never Too Cold

Sir: In looking over the Hungry Horse article in the June 8 issue, I was surprised to find this statement: "With the change-over to steel-frame structure, contractors will be able to work through cold weather, when concreting operations would normally have to be shut down." Since when have concreting operations had to be shut down because of cold weather?

R. B. YOUNG
Assistant Director of Research, Hydro-Electric Power Commission of Ontario

EDITOR'S NOTE—Mr. Young's experience is matched by his authority. He has been in the cold weather concreting business for a good many years.

STAINLESS STEEL

WHICH ALLOY FOR YOUR PIPING JOB?

Industry is rapidly turning to stainless steels as standard material for an increasing number of piping applications. Their ability to withstand the action of many corrosive agents, their toughness in sub-zero applications, their strength and ductility in elevated temperatures, and their high scaling-resistant properties, answer many tough piping problems.

Recent surveys show that 95% of the demand for stainless steel piping is in these three types:

Type 304—18% chromium, 8% nickel.
Type 347—18% chromium, 8% nickel, 1% Columbium.
Type 316—18% chromium, 8% nickel, 2% Molybdenum.

Each exhibits inherent qualities that make it ideal for certain applications. Thus, while the group as a whole covers 95% of industry's needs, individual applications should be studied carefully to determine which grade is best for the job.

For example, a prominent soap manufacturer's requirements are 100% Type 304 to eliminate product contamination; 45% Type 347, to carry low temperature organic acids; and 55% Type 316, to carry the same acids at elevated temperatures.

In the food and dairy industry, where the service is only mildly corrosive, the main reason for using stainless steel is to promote cleanliness and to eliminate contamination. Type 304 satisfies most of the demand here.

To provide the greater strength, greater safety and permanently leak-proof joints of welded piping construction, Tube Turns, Inc. has developed a wide selection of types and sizes of welded fittings and flanges in all three grades of stainless steels listed above. It's the most complete line available today.

TUBE TURNS Stainless Steel Welding Fittings made of the three alloy types listed here, are available in a wide range of parts and sizes, including elbows, returns, tees, reducers, caps, lap joint stub ends, laterals and crosses. Flanges are also furnished.

NEW CATALOG

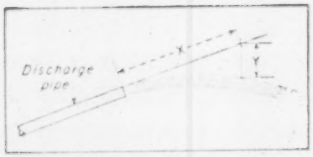
Write today for your free copy of the new Stainless Steel catalog just published by Tube Turns, Inc. It contains the complete description of TUBE TURNS Stainless Steel Welding Fittings and Flanges, as well as valuable information on the use of stainless steel piping.

"Be Sure You See The Double tt"

TUBE TURNS, INC.
LOUISVILLE 1, KENTUCKY

FIELD AND OFFICE

How to Estimate Flow from Pipes



Fast and simple means of estimating flow from pipes—horizontal, inclined and vertical—are described in March and April issues of THE RECLAMATION ERA. Author of the continued article is H. R. McDonald, engineer in the Bureau of Reclamation's hydrology division, Denver, Colo.

Discharge from all but vertical pipes, says McDonald, may be found in gpm using the formula—

$$Q = \frac{3.61\,A\,X}{\sqrt{Y}}$$

where A is cross-sectional area of water in the pipe in square inches, X is distance (in inches) along the pipe axis to a given point on the free-falling stream and Y is the vertical distance (inches) the stream falls in reaching the given point. (See the accompanying sketch, left above.)

If Y is assigned a constant value of 12 in., then only A and X need be determined for calculation of Q. Freeboard at the end of the pipe must be considered in figuring area of water flowing.

Fig. 1 gives solutions of the formula for Y = 12 in. and diameters of pipe from 2 to 15 in.

For estimating discharge of water flowing upward from a vertical pipe, McDonald presents Fig. 2. This graph is developed from tables based on findings of F. E. Lawrence and P. I. Bramworth ("Fountain Flow of Water in Vertical Pipes," ASCE Transactions, Vol. LVII, p. 264). Its use requires only measurement of H, height of the jet.

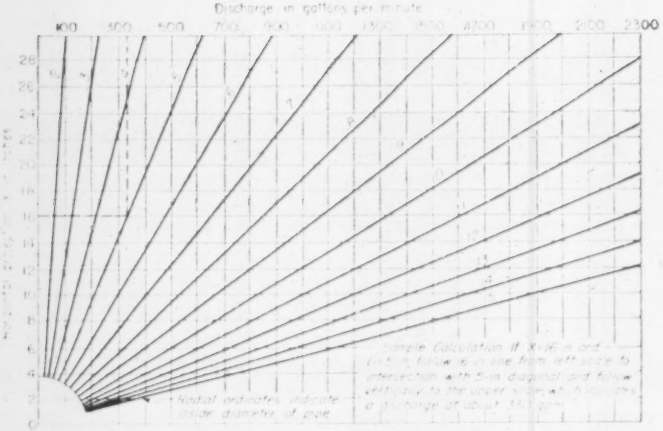


FIG. 1. DISCHARGE DIAGRAM for non-vertical pipes based on constant value of Y = 12 in. If pipe is not flowing full, multiply discharge found from diagram by an effective area factor.

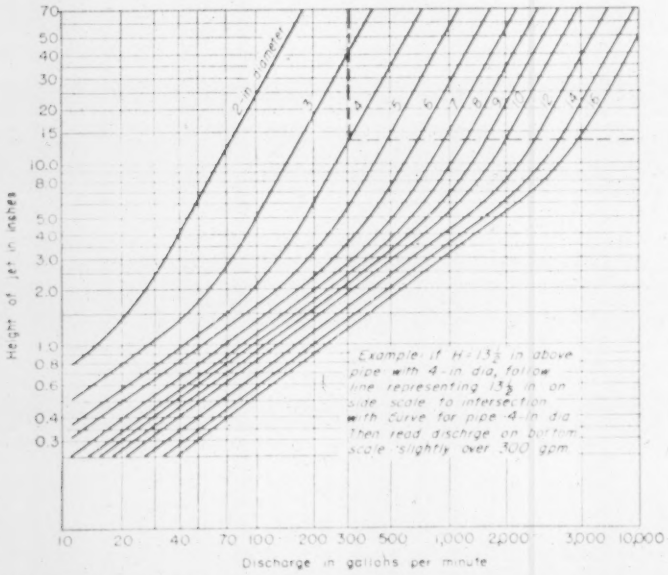
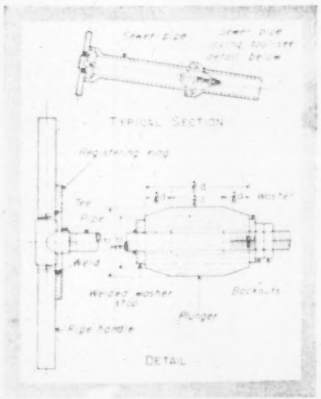

Height of jet in inches
2-in diameter
Example: If H=13⅜ in above pipe with 4-in dia, follow line representing 13⅜ in. on side scale to intersection with curve for pipe 4-in dia. Then read discharge on bottom scale slightly over 300 gpm
Discharge in gallons per minute

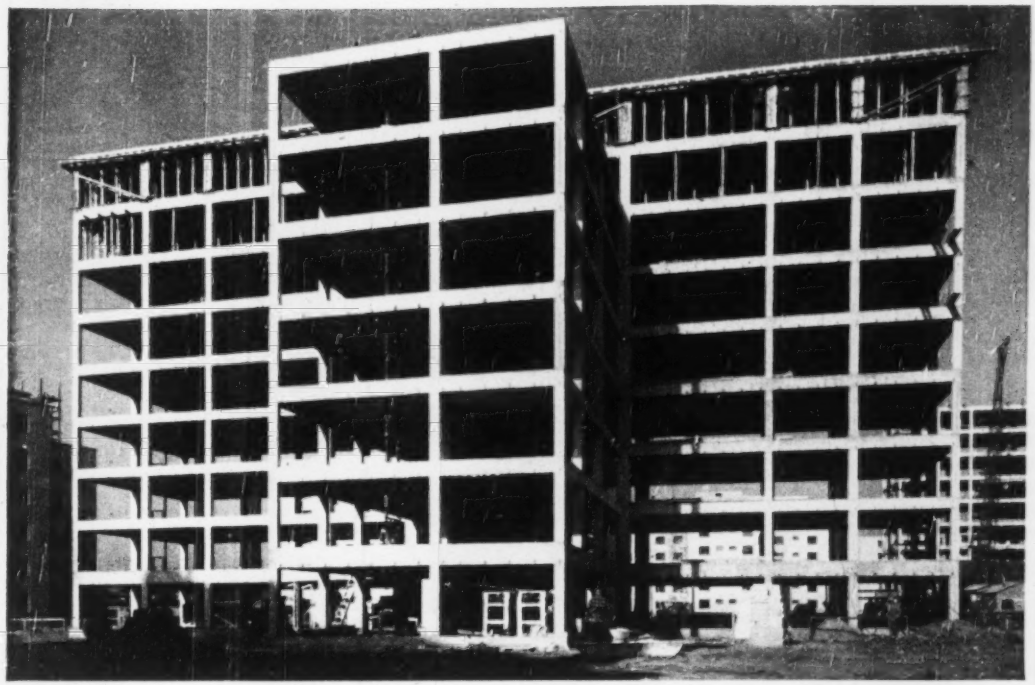
FIG. 2. UPWARD FLOW from vertical pipe can be found from this diagram; gives the inside diameter of the pipe and height to which water rises above its end.

Clay Pipe Aligner

This simple tool can be made up on the job, using either a rubber plunger or a wood plunger. Bells and spigots of clay pipe are held true during bedding and jointing. And the plug prevents intrusion of cementing material into the pipe bore—Marlsen G. Dempster, Canterbury, Victoria, Australia.



JOB-MADE aligner for clay pipe.



Get 3 PLUS Features by Building with

CONCRETE FRAMES AND FLOORS

REINFORCED concrete frame and floor construction offers three important *plus* features to architects, engineers, contractors, owners and investors.

First, concrete frames and floors effect substantial savings in construction costs. This type of construction can lower the cost of frames and floors from 25% to 40% under the cost of other types of construction.

Second, concrete frames and floors save construction time. Inasmuch as frame and floor construction proceeds together as a unit, the masons, plumbers, electricians and other tradesmen can do their part of the job as the structural work progresses.

Third, concrete frames and floors allow maximum latitude in design. There is a concrete floor system to meet every occupancy requirement. Partitions can be placed where they are most desirable because framing can be adapted to any architectural layout. Concrete frames and floors can be designed for any structural requirement or for any type of job. They are ideally adapted to schools, hospitals, apartments, hotels, factories, stores and office buildings.

Dearborn Homes (above) in Chicago on State Street between 26th and 30th Streets is a typical example of concrete frame and floor construction. This apartment project consists of 800 units in 16 buildings. Four buildings are 9 stories and 12 are 6 stories in height. Loebl, Schlossman & Bennett are the architects, Frank A. Randall & Sons the structural engineers and S. N. Nielsen Co. the contractor.

Our technical staff will gladly help architects and engineers attain the highest quality concrete and the maximum structural advantages of reinforced concrete construction for any building project.

Write for two free booklets: "*Continuity in Concrete Building Frames*" and "*Handbook of Frame Constants.*" Distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. 8E-17, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

keep costs down

with CP equipment

CP-20 Sump Pump operates from a 60 c.f.m. compressor. At 40 pounds pressure against a 15-foot head, its capacity is 200 gallons per minute. Operating from a 105 c.f.m. compressor at 80 pounds pressure against a 50-foot head, its capacity is 225 gallons per minute.

It is a single-stage centrifugal pump that requires no priming—starts pumping instantly when air is turned on and the unit lowered into water. For full details write for SP-3017.

New CP-337 Triplex Backfill Tamper—three CP Tampers on a Gunderson-Taylor mounting—enables one man to do the work of four single tampers . . . faster and with more uniformity. Handles higher lifts than single tampers, so that greater thickness of fill can be compacted to specifications.

The Triplex walks easily over the fill. Wheelbarrow type handles make the 140-pound unit easy to guide; smooth tamping action of the three tampers makes unit easy to hold.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

DEVELOPMENTS ABROAD

PUERTO RICAN HIGHWAY—A view of a section of the two-lane concrete highway in the mountainous interior of Puerto Rico, skirting the town of Cayey, and ribboning the plateau in the southeastern section of the island. It is part of the principal arterial link between the north and south coasts of Puerto Rico.—Hamilton Wright photo.

Reveal plans for paving Pan-Am. road through to Panama Canal Zone

It has been revealed by Edward Miller, Jr., assistant Secretary of State for affairs of the American republics that plans for completion of the Pan-American highway with paving all the way to the Panama Canal are almost ready.

Since the completion of the Mexican section of the highway this year only two major gaps remain unfinished between the U. S. border and the Canal Zone. These are a 50-mile stretch through difficult terrain in northern Guatemala and a 150-mile section in Costa Rica which has proved practically impassable for road-builders of that country.

A bill is now before Congress to appropriate $64,000,000 to finish the road and pave it, but owing to the military situation the fate of this proposed legislation is unknown. But if it does pass in its present form $8,000,000 a year will be made available for eight years.

The work to be done in Costa Rica is said to be the most difficult road construction ever to be attempted on the American continent. During the last war U. S. Army engineers worked on that stretch, but did not finish it on account of the great difficulties they encountered.

Tourists from the U. S. to Mexico may soon find available a fourth possible highway entrance to Mexico from the U. S., a road which will link up with the Pan-American highway next year.

The new route, which will be entirely paved and available for traffic in the early part of next year, according to the Mexican government authorities, will join the U. S. highway network at Eagle Pass, Tex., and will allow tourists to go to Mexico City via Saltillo, San Luis Potosi, Guanajuato and Queretaro, instead of the more familiar route from Laredo, Texas, to Monterrey, Mexico, and on to Mexico City.

Entrances to Mexico by paved highway from the U. S. now are via Laredo, via Eagle Pass, via El Paso, and via Brownsville, all in Texas. Work on the epic Mexican Pacific coast highway which will link up with Nogales, Arizona (gateway to Tucson) is continuing, but will probably not be finished before 1952.

Israel road building—Israel is planning an expenditure of $7,000,000 this year to keep up 1,280 miles of existing roads and to build 70 miles of new highways. About 3,500 workers are employed in this work.

More electricity for Greece—Work is starting on a plan to increase the installed electrical capacity in Greece by 165,000 kw. by means of one thermal and three hydroelectric plants. Some 1,650 miles of 150,000-volt transmission lines will be laid and about 25 step-down stations will be built. Total cost is estimated at $80,000,000, about one-fourth of which will be provided in dollar currencies from Marshall Plan funds.

Public works and housing projects in Puerto Rico

A public improvements program for the fiscal year 1950-51 has been started by the Department of the Interior of Puerto Rico with appropriations amounting to $12,580,000. The projects include construction of primary and secondary roads at a cost of $5,505,000.

Puerto Rico Housing Authority is asking bids for the construction of a large public housing development program to be undertaken under the terms of the 1949 National Housing Act. The program calls for the construction of 11,000 units, at an estimated cost of $50,000,000 during the next two years. The estimated cost per unit is $4,600.

In addition to the above program, the Puerto Rico Housing Authority expects to get allocations of Federal funds to build about 2,000 units in the non-farm housing Federal program, to increase the number of units to 15,000 during the next two years.

The largest project to be undertaken by the Puerto Rico Housing Authority consists of 900 units, for the San Jose Development project, at Hato Rey.

The Municipal Housing Authority of San Juan has announced a program for the construction of 2,800 units, and bids have already been advertised for the construction of the first project at Bonda Farm, consisting of 882 units.

U. S. city planners to help Sao Paulo

About twelve city officials and government experts are going singly to Sao Paulo, Brazil, on their own time, to help that city survey its public improvements.

Heading the group is Robert Moses, N. Y. City Construction Coordinator, Park Commissioner, member of the City Planning Commission, chairman of the Triborough Bridge and Tunnel Authority, and head of the Long Island State Park Commission. Others are Sidney Bingham, chief of the N. Y. City Board of Transportation; Dr. Richard Gould; Col. Wm. S. Chapin; Arthur Hodgkiss; Dean Thorndike Saville of the school of engineering, New York University, and William Latham.

The Mayor and city council of Sao Paulo extended the invitation through the International Basic Economic Corporation and the International Basic Economic Technical Service, of which Nelson Rockefeller is chairman. Sao Paulo has asked the Finance Ministry for approval of $90,000 to retain the group.

MUNICIPAL AFFAIRS

FOUR LARGE BRIDGES connect the twin cities of Little Rock and North Little Rock across the Arkansas River, making a metropolis in the heart of a state rich in natural resources and a progressive and energetic population.

Little Rock hospital building amounts to $20,000,000

Already well established as the hospital center of Arkansas, Little Rock is now watching the construction of some $20,000,000 of new hospital facilities. These, including a new Veterans Administration facility, are a part of a general building boom that keeps pace with the city's growth.

Engineering of this kind, of course, is normally to be seen in Greater Little Rock—made up of Little Rock and its sister city of North Little Rock across the Arkansas River—a panel of the first 11 principal cities of that state includes two important through highways and three railroads.

Struggling to contain a population increase of nearly 15 percent from 88,039 in 1940 to an estimated 101,000 in 1950, the city leaders have been looking at capital projects in an attempt to meet new housing and new traffic needs. New water supply, sewage disposal facilities, street improvements are all a part of current programs.

The $5,000,000 State Capitol building, a replica of the national capitol at Washington, D. C. Some of the other outstanding edifices in Little Rock are the Robinson Memorial Auditorium, the Territorial Capitol Restoration Center, the War Memorial Building, the $1,500,000 Senior High School, and St. Andrew's Cathedral.

Boosters consider the Little Rock area to be the center of a region of great potentialities because of its central location, developed natural resources, a large area from which the city commands trade. About 95 percent of all the population in America is found within a 500-mile radius of Little Rock. Pulaski and Saline counties, in which Little Rock is located, have a $50,000,000 plant now under construction by the Reynolds Metal Co.

Garbage grinders thumbed down in controversy

Household garbage grinders, let out in one Connecticut city last week, are a hotly contested item in many municipal disposal problems. Proposals to install grinders in new homes and thus avoid the cost of collecting garbage have been made in a number of communities that are faced with the problem of expanding their sewage facilities.

• **Garbage disposal**—Greenwich, Conn., authorized grinders in new homes last week. City officials decided that the units were a logical part of the disposal scheme.

The debate came to a head in Greenwich when the Common Council approved the proposal after a public hearing at which opponents of the grinders argued that they would overload sewage treatment plants.

A suggestion has been made that householders be taxed for garbage grinders. The money would eventually go for the enlargement of sewer facilities.

• **Compulsory expansion**—Pointing up another municipal problem, the Texas State Department of Health threatened legal action against Waco. State officials told the city to expand and rehabilitate its sewage treatment plant, otherwise the city would be subject to prosecution under the state anti-pollution laws.

Waco is now half way along on a $400,000 sewage project. When finished, sewage collection facilities will be available to about 72,000 people. But another 10,000 will not be served, despite the city's effort to cope with rapid and somewhat unexpected growth.

City officials are now trying to find ways to raise money.

And because of demands of the Oregon State Sanitary Authority, city development plans for Salem, Ore., now call for an $8,000,000 disposal plant as part of a 10-year program.

At Boston, the city council has suggested that the building of a $10,000,000 sewage plant be turned over to the Metropolitan District Commission, and that it be built on one of the islands in Boston Harbor.

Mandatory legislation now stipulates that the plant should be built by the city in the Dorchester district.

• **Government guarantees**—In Ontario, Canada, more than $23,000,000 a year is now being spent on new water and sewer work, according to the government-created Municipal Improvements Corporation. The agency said that more than 700 certificates are issued each year, MIC guaranteeing the debentures. Some 20 towns are undertaking sewage programs this year, and 42 have or are in the process of installing water systems.

• **Financing**—Akron, Ohio, is considering floating a $5,000,000 bond issue for new sewers. This would take care of only the urgent needs, according to Luther Linne, sewer engineer for the city. Some areas in Akron have no sewers. Others are poorly served.

Residents will share one-tenth of the cost of a $52,000,000 storm sewer project in Lucas County and Toledo, Ohio. It forms the largest part of a $70,000,000 five-year sewer program approved by the city council.

And a similar program of $11,000,000 is expected to get under way this fall in East St. Louis, Ill. The city plans the sale of $2,500,000 of general obligation bonds to meet its share of the expenses. The East Side Levee District Board will finance the trunk line sewer project with a bond issue of $3,000,000.

TUDOR PLAZA

Architect
Backus, Crane & Love, Buffalo
Consultant
Green & James, Buffalo
Contractor
Boehm Construction Co., Inc., Buffalo
Steel Fabrication and Erection
R. S. M. Massey Steel Construction Co., Inc., Buffalo

Tudor Plaza, one of the newest additions to the quiet, tree-studded Delaware Avenue section of Buffalo, N. Y., stands 9 stories high, and has facilities for 68 families. The attractive, fire-retardant building is co-operatively owned, and its apartment units vary in size from 1½ to 9 rooms, including two spacious penthouse apartments. The structure also has a 65-car detached garage.

Tudor Plaza has an abundance of windows, and a neat-looking facing of rustic brick, beneath which stands a steel framework of Bethlehem Structural Shapes.

Bethlehem
STRUCTURAL SHAPES

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

EDUCATION and RESEARCH

ATOM SMASHER—When the bevatron (big younger cousin of the cyclotron) goes to atom-smashing in this building on the University of California's Berkeley campus, protons are expected to bombard targets with a force of 6,000,000,000 electron volts. The machine, which will have a 100-ft-diameter magnet, is being constructed under a $9,000,000 Atomic Energy Commission allotment. Engineering on the project was done by Masten & Hurd, San Francisco; Pacific Coast Builders have the general contract, and Consolidated Western Steel Corp. is doing the steel fabrication and erection. The dome-shaped structure on the hill at the left is the cyclotron which was completed in 1942. (ENR, April 9, 1942, vol. p 536—U. S. Steel Co. photo.)

New buildings under way at engineering schools

Extensive college building construction now under way includes a number of structures for science and engineering.

Western Reserve. Announcement has been made by Western Reserve University, Cleveland, Ohio, of the awarding of a contract to the George A. Rutherford Co., general contractors, for the building of the School of Applied Social Sciences to be erected on the east side of Mayfield Road, south of Euclid Avenue, on the university campus. The plan covers the intent to construct a building. Pending gifts, it is said, the upper stories of the wings to be first built to the back of the three rooms be added, pavements, lighting. Construction on the $3,500,000 structure will begin this summer. The building is expected to be completed before the end of the 1950-51 school year.

Manhattan. A contract has been let for a $3,000,000 science building on the campus of Manhattan College, Riverdale, N. Y. City, to be completed next year. Plans are under the direction of Engineering Research Associates, Inc., which will also implement the program. Both the laboratories and the research work in the engineering school.

Danville, Va. Ground-breaking for the first of the Virginia Polytechnic Institute's expansion buildings, a $1,000,000 engineering building on the campus at Danville, is scheduled for Sept. 15. The building will be devoted to engineering classrooms, mechanics hall and laboratories.

Alabama Poly. With a $3,000,000 building program under way at the Alabama Polytechnic Institute, Auburn, Ala., another $3,888,000 of campus construction is now being planned. At present under construction is a $500,000 architecture and allied arts building, a $450,000 general education building, and a $175,000 service building. Also in the planned program, a $1,000,000 men's dormitory for 400 students, a women's dormitory for 375 and more than $1,250,000 of kitchen, including "all" facilities for women students. In addition, a $1,000,000 union building is planned, together with structures for engineering, physics, field service, dairy and administration offices.

Educational Notes

European technicians at M. I. T. Advanced training in the Massachusetts Institute of Technology has been made available this summer for 50 European engineers and city planners by the Economic Cooperation Administration. Under the technical assistance program, qualified technicians from industry, government and education in 12 Marshall Plan countries are working in groups, each will further its particular interest. The ECA-financed program is participating in MIT's third Foreign Student Summer Project. The work is organized and conducted by the student body with assistance from the faculty and administration. Tuition fees are waived. Other expenses were covered in 1948 and 1949 through contributions from business, foundations, and private individuals. This year ECA is paying $18,000 to cover living expenses of 36 of this group of foreign students.

Cost accounting for homebuilders. Development of a standardized cost accounting system for possible use by homebuilders is the objective of a study to be made by the University of Michigan, under the HHFA housing research program. A study will be made of small and large unit housing projects including prefabs. It is expected that the results will enable builders to forecast costs more precisely and compute capital requirements more accurately.

City planning course. Rutgers College of Engineering, New Brunswick, N. J., will graduate its first city planners next June. Combining engineering, sociology, political science and economics, Rutgers students in this course learn enough about all of these subjects to be able to coordinate them in their work. The planning majors combine classroom theory with work in the field in nearby communities.

Scholarships. Ralph E. Mills of Frankfort, Ky., through the Ralph E. Mills Foundation, has created a scholarship in the College of Engineering, University of Kentucky, and the Kentucky Association of Highway Contractors has also created a $500 engineering scholarship at the same institution.

Faculty changes. New appointments at the College of Engineering, University of Florida include: Elwood Hendrickson, associate professor of civil engineering and associate research engineer for the engineering and industrial experiment station; Theodore Little, program assistant professor of civil engineering; Chas. E. Cutts, associate professor of civil engineering and associate research engineer; Walter H. Zumpfe, assistant professor of civil engineering and assistant research engineer; and A. Philip Welch, assistant research engineer.

Puerto Rican engineers. The College of Agriculture and Mechanics Arts of the University of Puerto Rico at Mayaguez, P. R., reports that a total of 144 engineers was graduated on June 5, 1950. Out of the total, 95 are civil engineers.

ELECTIONS AND ACTIVITIES

Robert Patton, of Charlotte, N. C., executive secretary of the Carolinas Branch of Associated General Contractors, has been named managing director of the branch. James L. Pou, of Charlotte, former assistant executive secretary, has been named manager of the Building Contractors Division, and S. C. Austin, of Raleigh, N. C., also a former assistant executive secretary, has been named manager of the Highway and Road Contractors Division. The appointments are a result of increasing membership of the organization, which recently merged with the Carolinas Road Builders Association. Expansion of office facilities in Charlotte, Greensboro, N. C., and Columbia, S. C., also has been made necessary by the growth of the group.

An operating charter for 77 members of the American Society of Civil Engineers at Maine was recently presented to the group. The Maine engineers have been working 15 years for national recognition. Neal McDowell, highway engineer for the U. S. Bureau of Public Roads at Augusta, and Hamilton Gray, professor of civil engineering at the University of Maine, head the recent officers. Among other leaders are Major Stickpole, district engineer, U. S. Geological Survey; Elmer W. Campbell, director of the State Division of Sanitary Engineering; Bryant F. Hopkins, hydraulic engineer of the Kennebec Water Power Company and secretary of the State Registration Board for Professional Engineers; W. S. Evans, professor of civil engineering at the University of Maine; and Willis G. Pratt, construction engineer, Oxford Paper Company, Rumford.

Chicago's younger home builders have formed the Junior Home Builders of Chicagoland, described as the first organization of its kind in the country. A constitution and by-laws have been adopted and officers will be elected Sept. 12. The group has been given a charter by the Chicago Metropolitan Home Builders Association.

Ross H. Reynolds of Raleigh, N. C., has been elected to the presidency of the North Carolina Society of Engineers and is scheduled to be elected at the group's annual convention. Also nominated were J. Hamilton Lee, Hicks of Wilmington and Earl L. Betts of Lenoir, all for vice president; E. C. Key of Clinton and Major Society of Greensboro, for director of District 1; D. D. Davis of Durham and George B. Clarke of Raleigh for director of District 2; World B. Bridgers of Greenhaven and Charles M. Spruill of Winston-Salem for director of District 3; and John C. Walker of Asheville and M. K. Connor of Charlotte for director of District 4.

CALENDAR

N. Y. section, AWWA. Fall meeting, Sagamore Hotel, Upper Saranac Lake, N. Y., Sept. 6-7.

South Dakota Reclamation Association. Convention, Pickstown, Sept. 10-11.

Conference on "Ground Facilities for Air Transportation." Massachusetts Institute of Technology, Cambridge, Mass., Sept. 11-13.

Canadian Institute on Sewage and Sanitation. Annual convention, Hygeia Inn, Ontario, Sept. 11-13.

W. Va. section AWWA. Annual meeting, Prichard Hotel, Huntington, W. Va., Sept. 12-13.

Convention of Roadmasters' and Maintenance of Way Association, and American Railway Bridge and Building Association. Hotel Sherman, Chicago, Ill., Sept. 18-21.

New England Water Works Association. Colonial Springfield, Mass., Sept. 19-21.

American Society of Photogrammetry. 17th annual convention, Shoreham Hotel, Washington, D. C., Sept. 19-22.

Building Research Advisory Board. Research correlation conference, Northwood Training Center, Stevens, Washington, Sept. 20-22.

Pennsylvania Water Works Association. Chamberlin Hotel, Atlantic City, N. J., Sept. 20-22.

Rocky Mountain Sewage Works Association. Fort Peck Hotel, Glasgow, Mont., Sept. 21-23.

South Dakota State Association of Engineers, Commissioners, Auditors, Highway Superintendents and State Highway Commissioners. Annual meeting, Chamberlain Hotel, Sioux Falls, Sept. 21-22.

National Council of State Boards of Engineering Examiners. Congress Hotel, Chicago, Ill., Sept. 21-23.

ASCE. Fall meeting, Commodore Hotel, Cleveland, Ohio, Sept. 25-28.

Public Works Congress and Equipment Show. 29th Reinforced Concrete Research Council, Sept. 25-27.

Water conference, Engineers' Society of Western Pennsylvania. Hotel William Penn, Pittsburgh, Pa., Sept. 26-28.

National Association of Housing Officials. Detroit, Mich., Oct. 1-3.

National Conference on Industrial Hydraulics. Pittsburgh, Pa., Oct. 2-3.

Pennsylvania section, AWWA. Bedford Springs, Pa., Oct. 2-4.

Engineers' Council for Professional Development. Public Affairs Conference, Washington, D. C., Oct. 2-3.

National Public Health Engineering Conference. University of Illinois, Urbana, Ill., Oct. 2-4.

Structural Clay Products Industry. Broadmoor Hotel, Colorado Springs, Colo., Oct. 4-6.

American Institute of Steel Construction. Shoreham Hotel, Washington, D. C., Oct. 5-6.

American Concrete Institute. Mayflower Hotel, Washington, D. C., Oct. 5-6.

Carolinas Branch, A.G.C. Wade and Plantation Estates, W. Va., Oct. 5-7.

Just Out

THE EFFECTS OF ATOMIC WEAPONS

CHECK LIST

of other recent McGraw-Hill books

2. FOUNDATIONS OF STRUCTURES

By Clarence W. Dunham. $7.50.

3. STRUCTURAL PLASTICS

By H. C. Engel, C. B. Hemming, and H. R. Merriman. $3.50.

4. MUNICIPAL AND RURAL SANITATION

By V. M. Ehlers and E. W. Steel. $6.50.

5. HYDROLOGY

By Daniel W. Mead. $7.50.

6. MOISTURE REQUIREMENTS IN AGRICULTURE

By Harry Burgess Roe. $5.50.

7. HANDBOOK OF RIGGING

By W. E. Rossnagel. $1.75.

McGRAW-HILL

SEND TO
McGraw-Hill Book Co.
330 W. 42 St. N.Y.C. 18

10 DAYS FREE TRIAL

McGraw-Hill Book Co., Inc.
330 W. 42nd St.,
New York 18

MEN AND JOBS

Walter A. Schwarz, until recently resident engineer at Dorena Dam, unit of the Willamette Basin Project in western Oregon, retired from the Corps of Engineers recently after 16 years of government service. Before joining the Corps of Engineers he was a district engineer with the Washington State Highway Department, camp superintendent for the forest service, and director of operations for WPA in Washington State.

Dodson, Kinney & Lindblom, a new engineering firm, has been organized with offices at 5 E. Long St., Columbus, Ohio, by Robert K. Dodson and C. E. Lindblom and A. M. Kinney. Latter heads the Cincinnati engineering and architectural firm of A. M. Kinney, Inc., giving the Columbus firm representation in Cincinnati and New York City. Dodson is a graduate of the University of Kentucky and served as chief hydraulic engineer with the U. S. Corps of Engineers in Cincinnati until 1946. For the last three years, he has directed water conservation and flood control projects for the Scioto-Sandusky Conservancy District at Columbus. Lindblom is a graduate of the University of Cincinnati, serving for 17 years with the U. S. Corps of Engineers in the Cincinnati office, and joining the Scioto-Sandusky Conservancy District as assistant chief engineer in 1947.

E. C. Thompson, resident engineer for the Tennessee State Highway Department, has been appointed division office engineer at Nashville. Thompson, who has served in various positions with the Department since September, 1928, attended Mississippi A. & M. College. He succeeds **F. Murphy Payne**, who has held this position for the last 15 years, and has been advanced to senior district maintenance engineer with headquarters at Nashville.

D. J. Gore, of Wilmington, N. C., has been named superintendent of the municipal public works department at Fayetteville, N. C., succeeding **James C. Hill**, who died recently.

Halifax, N. S., has appointed **W. A. G. Snook** as town planning engineer and **Charles Day** as building inspector to replace **F. C. Thomas**, appointed division engineer.

Ernest P. Clark, former city manager of Ocala, Fla., has been named superintendent of the new water and sewage treatment plant now nearing completion.

Harold A. Linke has resigned as state engineer of Utah and has joined with **Wm. Templeton** of Salt Lake City in incorporation of the firm of Templeton and Linke, consulting engineers, with offices in the Deseret Building, Salt Lake City, Utah.

The Department of Public Works, Ottawa, Ont., has appointed **W. H. Hunt** of Winnipeg as supervising engineer for the Saskatchewan Section of the Trans-Canada Highway, **Walter Youngman** of Winnipeg in a similar capacity for Alberta section, and **E. T. Wilson** of Winnipeg to supervise construction of the Manitoba section of the National Highway.

Clarence Windsor, Anderson, Ind., has been appointed planning engineer for the Indiana Economical Council. He has been with the U. S. Bureau of Roads and the Indiana Highway Department. He is a Purdue University graduate.

With Narrows Dam in Arkansas as a backdrop, an inspection quartet of federal officials is caught by the cameraman. They are (l. to r.): R. C. Warder, resident engineer on the project; E. D. Peterson, chief of the Civil Works Branch, Bureau of the Budget; Gen. Peter A. Feringa, president of the Mississippi River Commission; and R. G. Baker, chief of the Construction Division, Vicksburg District, Corps of Engineers.

Supervising the construction of the $18,000,000 Chain of Rocks Lock No. 27, on a cut-off canal of the Mississippi River above St. Louis are (front row, left to right): E. J. Leslie, field office engineer; Grover A. Allen, resident engineer for the St. Louis District, Corps of Engineers; and Geo. Rintmeir, superintendent of construction for the River Construction Corporation. Back row, left to right: Erwin Schmidt, chief inspector, and R. J. Dunlap, project manager.

OBITUARY

Clifford A. Hahn, 68, a civil engineer and director of the Philadelphia regional office of the United States Department of Commerce, died at Philadelphia, Aug. 11. He was educated at Boston and Columbia Universities. He worked in an engineering capacity with the City of New York, American International Shipbuilding Co., Hog Island, Philadelphia, Stone and Webster, Inc., Boston, and the H. J. Heinz Co., Pittsburgh. He formerly was president and general manager of the Holtzer-Cabot division of the East Industrial Corp. in Boston.

Timothy E. Downey, 82, construction engineer and builder of railroad and drawbridges in many sections of the United States and Canada, died Aug. 11 at his home in New Bedford, Mass. At one time he was superintendent of buildings for the Department of Education of New York City and later was appointed assistant resident engineer for the Public Works Administration of the State of New York.

Herbert N. Dawes, 78, for many years consulting engineer, died at Brookline, Mass., Aug. 14.

Richard Dukes, 70, dean emeritus of the graduate college and a member of the engineering faculty for 35 years at Purdue University, Lafayette, Ind., and his wife, Mrs. Mary Irene Dukes, 60, were killed in an automobile accident at Alton, Ill., recently. He had retired in 1942. He attended DePauw University, the Massachusetts Institute of Technology and Cornell University, having been graduated from the latter in 1898. He taught at Worcester Polytechnic Institute, Worcester, Mass., Cornell University, and at the Case School of Applied Science. He joined the Purdue engineering staff in 1909, and became dean in 1917.

John W. Snyder, 81, president of John W. Snyder and Co., Chicago, Ill., who erected the Chicago Stadium, the University of Illinois college of medicine and dentistry, the atomic research building of the University of Chicago, and the Goldblatt Memorial hospital, died Aug. 7.

William S. Rhodes, 70, retired civil engineer who was attached to U. S. Army, duty for many years, died at Roslindale, Mass., on Aug. 15. He was a graduate of the Massachusetts Institute of Technology.

CUT FORM CLAMP LABOR COSTS!

9,000 lb. TAPER-TYE CONCRETE FORM CLAMP

PATENT NO. 2365563

AVERAGE QUOTED SAVING—40%!
This according to superintendents on many jobs. Write for verification of *savings* on actual jobs.

ELIMINATES EXPENSIVE MAKEUP!
One continuous tapered rod, adjustable 6" to 14" concrete. Also combinations up to 46" as illustrated above.

SAVE MONEY IN STRIPPING!
Remove true tapered rod from one side only!

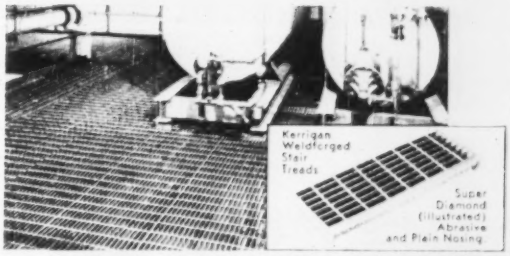
Write for descriptive literature!

H. J. KRUEPER Co.

535 SOUTH CLARENCE ST. LOS ANGELES 33, CALIF.

Some Distributor Franchises Available

A SAFER, STRONGER OPEN STEEL FLOOR for every industry



You get an extra margin of safety with Kerrigan Weldforged steel flooring and stair treads. Continuous spiral cross bars slightly above bearing bars and alternating right and left leave no slick spots. Cross bars are Weldforged into bearing bars to form a one piece unit of great strength.

For safety, strength, maximum light and ventilation, easy installation and maintenance, always specify Kerrigan Weldforged grating and stair treads. Its uses are many, indoors and out, open flooring, stair treads, sidewalk doors, catwalks, subway grating . . . to name only a few.

Send today for desk size sample and latest catalog. Write Department 23

Weldforged GRATING DIVISION

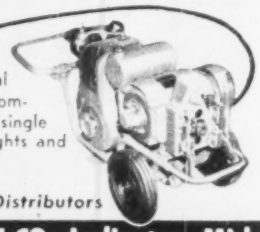
KERRIGAN IRON WORKS, INC.

GENERAL SALES OFFICE, 274 MADISON AVE., N.Y.C.

MID-WEST SALES OFFICE, 2725 W. PETERSON AVE., CHICAGO

THE
JACKSON
VIBRATORY SOIL COMPACTOR

This machine can be used to TREMENDOUS ADVANTAGE in compacting granular backfill under FACTORY FLOORS, in TRENCHES, BRIDGE APPROACHES, close to BRIDGE ABUTMENTS, along side FOUNDATIONS, under FOOTINGS, RAMPS, SIDEWALKS, MUNICIPAL PAVEMENTS, LOADING DOCKS; in compacting such granular soil as is used in EARTH FILL DAM CONSTRUCTION and many other places. Delivers up to 4500 ½-ton vibratory blows per minute. Propels itself at 6 to 8 ft. per min. One man can guide two units side by side.



Operates on 110 volt, 3-phase AC from Jackson Portable Power Plant or commercial power. M-2 plant, at right, will operate 5 compactors. M-1 plant operates 2. Both generate single and 3-phase current and can be used for lights and operating other tools as well as compactors.

For Sale or Rent by Jackson Distributors

ELECTRIC TAMPER & EQUIPMENT CO. Ludington, Mich.

MADE TO TAKE A *Beating...*

KONIK metal has the strength and tough endurance that culvert use demands. It resists rust and corrosion and the constant pressures culverts have to take. KONIK is an open-hearth metal that contains copper, nickel, chromium and other elements and, it is heavily zinc coated for still greater protection. For culverts that will last longer get KONIK metal. Ask your culvert distributor or write Continental at Kokomo, Indiana.

ASK TO SEE THE KONIK CULVERT METAL WARRANTY

Your Continental Culvert sheet distributor will be glad to show you the Certified Analysis that assures longer culvert life with KONIK metal.

CONTINENTAL STEEL CORPORATION

FENCE • BARBED WIRE • POSTS • NAILS • ETC.

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

"GUNITE"
NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel
Write for our new 48 page Bulletin
PRESSURE CONCRETE CO.
Gunite Contractors and Engineers
193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.
Liberty Life Bldg., Charlotte, North Carolina

Otto K. Jelinek, 50, president of the Illinois section of the American Society of Civil Engineers and former planning engineer for the Chicago Park District, died Aug. 18 in Brussels, Belgium. He was chiefly responsible for developing Chicago's Lake Shore Drive. He invented the disappearing traffic lane separators in the drive. During the Park District war rotation in 1921, he was made chief traffic engineer in 1950. He solved the traffic problem at the 1933 Century of Progress exposition. After the war he had charge of developing a $24,000,000 small parks program. He left the Park District in 1946 to join Ralph H. Burke in designing the city's airports. He studied at the former Armour Institute of Technology.

Charles H. Warren, 73, dean emeritus of the Sheffield Scientific School at Yale University, died Aug. 16 in Torrington, Conn. His home was in Litchfield, Conn. He was graduated from Yale in 1896 and was on the faculty of the Massachusetts Institute of Technology from 1900 to 1922. In the latter year he went to Yale as dean of the Sheffield School, professor of geology and chairman of the department of geology. He later became professor of paleontology and was widely known for his writings in that field. He retired in 1945.

Henry A. Allen, 83, World War commander of Chicago's 105th Combat Engineers and former engineer for the city, died Aug. 18. Colonel Allen was in charge of Chicago's water pumping stations from 1912 until his retirement two years ago, with the exception of the time in the Army. He was graduated from the U. S. Naval Academy in 1887. He spent two years in the Navy and then became a water engineer in Hawaii for the Allis Chalmers Mfg. Co. In 1907 President Theodore Roosevelt appointed him to a group charged with making the final estimate of the time required to complete the Panama canal.

Chester L. Post, 70, a consulting engineer for the U. S. government, died in Washington, D. C., Aug. 21. Recently he had worked on the White House renovation, the new Public Health Clinical Center and the General Accounting Offices, and was to have retired in a few days. He had civil engineering degrees from Rose Polytechnic Institute, Terre Haute, Ind. He was an Army engineer in the first world war. At one time he was a partner in the firm of Condron and Post, Chicago.

UNIT PRICES BID BY CONTRACTORS

Drainage improvements in Russell, Kansas

A low bid of $6,542.37[illegible] below the engineer's estimate was received by the city of Russell, Kan., July 12, 1950, on drainage improvements. All four bids were under the estimate with the low bid 10[illegible]% below second low and 28[illegible]% below the high. Williams and Company, Salina, are engineers.

Work started August 1 and must be completed by September 15. Bid includes furnishing all labor, materials and equipment for constructing storm sewer pipelines complete with reinforced concrete manholes and inlets. These improvements are on Culp St. from Lincoln to Wisconsin, and on Elm St. extending each way from the intersection with Little St., all within a mile of railroad tracks.

Wage rates prevailing are for skilled labor, $1.50 an hour; and for common labor, $1.00. Bidders were:

1. David Schwartz, Russell, engineer ..... $6,[illegible].47
2. Burt & Bunnell, Hutchinson ..... [illegible]
3. Inland Const. Co., Wichita ..... [illegible]
4. Diamond Engr. Co., Great Bend ..... [illegible]
5. [illegible] ..... [illegible]

Engineer's estimate ..... [illegible]

Items	Quan. Qty.	Unit prices 1	2
Excav. and [illegible]	cy	300	$1 00	$1 00
Conc. curb & gutter	lf	60	2 00	1 50
Conc. sidewalk, 4"	sf	250	50	55
Cor. metal pipe, 12"	lf	30	2 50	3 00
Storm sewer, 12" RCP	lf	29	2 50	3 00
24" RCP	lf	124	4 25	4 25
42" RCP	lf	326	8 50	9 50
Inlet, No. 1	ea	1	150 00	250 00
Inlet, No. 11	ea	1	160 00	300 00
Manhole, Type M	ea	1	160 00	200 00
Reloc. exist. drain pipe	lf	88	1 50	2 00
Brick pav. cut & repl.	sy	10	5 00	5 00
Remov. sidewalk	sf	50	10	10
Remov. curb & gutter	lf	90	25	20

Concrete pavement Oakland County, Mich.

Five bids, 23.3% apart, were received June 29, 1950, by the Michigan State Highway Department on 5.025 miles of concrete pavement in Oakland Co. The low bid of $[illegible] was 0.3% below the next to low bid.

The work is in Royal Oak and Troy Townships. It extends from existing M-150 near Eleven Mile Rd. northerly on relocation to present M-150 near Sixteen Mile Rd. at the village of Big Beaver.

This job, consisting of grading, drainage structures and 22-ft and 46-ft concrete pavement, 9-in. uniform, must be completed by December 31. Work started 10 days after notice of contract award. The contractor must maintain traffic by part-width construction and bridge over pavement.

Wages to be paid on power equipment operators, $1.825-2.275; cement finishers and form setters, $2.125; pipe layers, $1.875; cement handlers, $1.625; unskilled laborers, $1.575.

Class A culverts used at draws include reinforced concrete culvert pipe and sewer pipe, corrugated metal pipe and reformed pipe, encased tile, cast iron pipe, reinforced concrete culvert pipe and extra strength vitrified clay pipe. Class B culverts used under the highway include reinforced concrete culvert pipe, encased tile and cast iron pipe. The catch basins specified in the unit prices below are identified by figure and letter. The figure designates the necessary detail of the structure. Type 3 basin is 2.8-in. diameter at the top and 4-ft at the bottom while type 6 is 2.8-in. diameter throughout. The letter indicates the type of cover to be used. "S" means side inlet. Bidders included:

1. Cooke Contract Co. & Jones Corp., Joplin, Detroit (contract) ..... $[illegible] to
2. Julius Barath & Son Co., Detroit ..... [illegible]
3. E. A. Davidson, Lansing ..... [illegible]

Items	Quan. Qty.	Unit prices 1	2
Clearing	ac	5	$300 00	$[illegible] 00
Grubbing	ea	341	1 50	1 25
Remov. trees,				
6" to 12" diam.	ea	35	20 00	20 00
13" to 24"	ea	11	30 00	30 00
25" to 36"	ea	11	60 00	50 00
37" and more	ea	1	150 00	75 00
Old pav. remov.	sy	1,395	1 00	1 00
Sidewalk remov.	sy	40	1 00	1 00
Masty. conc. rem.	cy	110	5 00	10 00
Catch basins, remov.	ea	2	25 00	25 00
Abandon	ea	2	25 00	25 00
Earth excav.	cy	121,539	2[illegible]	2[illegible]
Overhaul	cymi	161,[illegible]	15	15
Portous backfill, Grade				
B (Sewer trench)	cy	1,004	2 50	3 00
Grade A (conc.	cy	253	15 00	50 00
Steel reinf.	lb	9,111	10	09
Culverts				
12" CI A	lf	198	2 00	2 00
15" CI A	lf	24	2 25	3 00
18" CI A	lf	24	3 00	4 00
12" CI B	lf	24	2 50	2 50
15" CI B	lf	466	3 00	3 50
18" CI B	lf	220	3 50	4 00
30" CI B	lf	236	6 50	5 00
42" CI B	lf	63	10 00	8 00
48" CI B	lf	54	14 00	10 00
12" cor. metal pipe	lf	12	3 00	3 00
18" cor. metal pipe	lf	20	3 50	3 50
8" sewer, open tr.	lf	3,479	1 00	80
12" sewer	lf	901	1 65	2 10
15"	lf	1,412	2 00	2 00
18"	lf	1,[illegible]	2 25	1 50
21"	lf	260	3 00	3 50
Manholes 1A	ea	9	150 00	200 00
Catch basins 3-E	ea	2	150 00	160 00
3-G	ea	3	150 00	160 00
3-S	ea	3	150 00	160 00
6-D	ea	1	150 00	150 00
6-E	ea	2	150 00	170 00
6-G	ea	1	150 00	150 00
Adj. manhole cov.	ea	1	50 00	50 00
Adj. catch basin cv.	ea	1	50 00	50 00
Manhole, frames &	ea	3	100 00	200 00
Catch basin, frames &	ea	1	100 00	100 00
Exist. guard, clean up	sta	362	15 00	50 00
Conc. curb, gutter,				
detail 2 (Mod.)	lf	501	2 50	2 50
Conc. roll curb &				
gutter, detail 3	lf	300	2 00	2 00
Conc. pav. 9" uniform	sy	70,272	3 10	3 30
8" uniform	sy	1,000	3 10	3 20
7" uniform	sy	1,[illegible]	3 00	3 00
Pav. reinf.	sy	72,[illegible]	16	15
Apr. approach, conc.				
mat, 8"	cy	2,402	22	3 00
Bit. approach mix	T	628	12 00	11 00
Conc. curb header	lf	127	3 00	2 50
Stab. earth slides	sta	661	3 00	3 00
Shoulder berms	cy	6,[illegible]	2[illegible]	2[illegible]
Water for wetg. Mgal		16	5 00	20 00
Topsoil surf.	cy	7,[illegible]	2[illegible]	2[illegible]
Plain riprap	cy	15	10 00	5 00
2 rail guard rail	lf	200	3 50	2 50
Flared end panels	ea	4	30 00	30 00
Guard posts	ea	21	5 00	8 00
Sod, CI B	sy	1,[illegible]	16	10
Markers, Bit. pav.	ea	2	25 00	30 00
Conc. R of way	ea	5	10 00	10 00
Bridge over pr.	ea	2	100 00	100 00
Part width const.	sta	2 9	50 00	50 00
Part width const.				
(per culv.)	ea	2	150 00	200 00
Oiled dirt road	ac	1	150 00	100 00
Final trim, clean up	sta	9	15 00	20 00

TAMING THE TOUGH ONES

WARRINGTON-VULCAN

SINGLE-ACTING STEAM

PILE HAMMERS

Tough piles tame quickly when Warrington-Vulcan goes to work. It's a powerful, rugged hammer, built for heavy duty through and through, for economical trouble free performance year after year on the most difficult pile driving projects.

Its action is regular and continuous; its design is simple for easy operation, and it is built with a durability that gives you dependability on job after job.

The Single-Acting Warrington-Vulcan operates at medium steam pressure, delivering a moderate frequency of low velocity blows from a relatively heavy ram to drive piles of any description.

Write today for complete details.

VULCAN IRON WORKS Since 1852

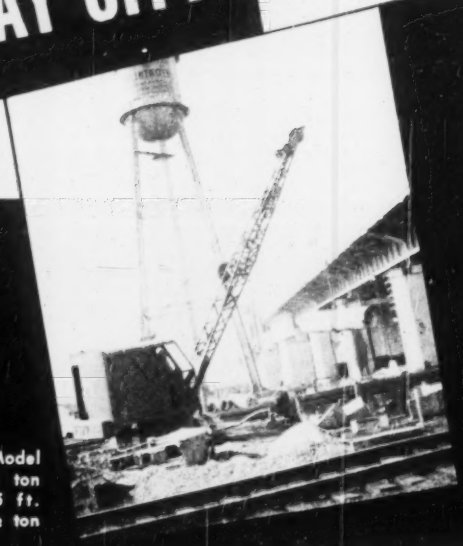
331 North Bell Avenue

Chicago 12 ---Illinois

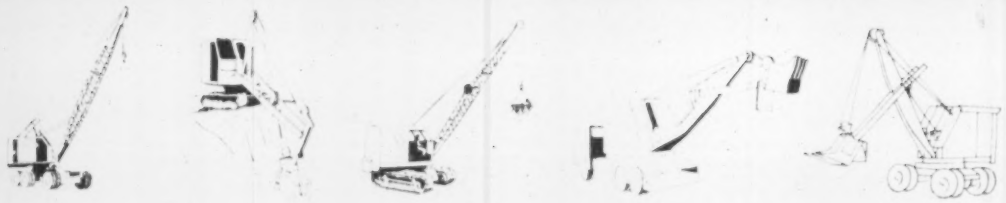
BAY CITY on a $10,000,000 job

FRANK STAMATO uses five hard-working BAY CITY machines to speed up New Jersey sewage project

A BAY CITY Model 30, ½ yd., 6½ ton crane with 35 ft. boom setting 1½ ton pipe sections.



A Model 15 T40 Crane-Mobile with clamshell and a ¾ yd. Trench-Hoe, excavating for sewer line.



A BAY CITY Model 45 working as a back-hoe, doing narrow trench excavation.

Frank Stamato & Co. of Lodi, N. J. is sold on the rugged dependability of BAY CITY equipment and proves it by using five BAY CITY machines on the 10 million dollar, 20 mile long Overpeck Valley Joint Sewage Project. The job calls for sewer excavation 4' wide by 14' deep, and the BAY CITY machines are exceeding every estimate as they turn in dependable trouble-free performance day after day. Contractors everywhere have found that, no matter how tough or how big the job, there's a BAY CITY to do it better. See your nearest BAY CITY dealer for further information on our complete line of cranes, shovels and material-handling equipment, or write us direct — BAY CITY SHOVELS INC., BAY CITY, MICHIGAN.

A BAY CITY Model 45 equipped with ¾ yd. bucket, removing excavated dirt from another section.

The CraneMobile is available in 5 sizes with crane capacities up to 25 tons. For complete details, write for catalog.

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager J. A. MAHONEY, Reports M. R. ROESSLER, Statistics

WATER SUPPLY

BIDS ASKED

La. Vinton (V) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Mo. St. Louis (V) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

La. Gretna (V) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

La. New Orleans (V) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

La. Metairie (V) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Mass. Cambridge (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Fla. Jacksonville (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Va. Lynchburg (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

LOW BIDDERS

Mass. Needham Tank Const. Co., Inc., Fort Wayne, Ind. ... $91,646 ... CD 7-31

O. Toledo Layne-Ohio Co., Columbus, O. ... $208,845

Pa. Norristown Layne-New York Co., Inc., New York, N. Y. ... $309,540 ... $10,903 ... $61,000

Tex. Marfa Layne-Texas Co., Houston, Tex. ... $43,672 ... CD 7-31

CONTRACTS AWARDED

Colo. Denver Layne-Western Co., Houston, Tex. ... $194,114

▲ Tex. Dallas Layne-Texas Co., Houston, Tex. ... $1,629,000

SEWERS, WASTE DISPOSAL

BIDS ASKED

Calif. Los Angeles (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Tex. Harlingen (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Tex. Highlands (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

D. C. Wash. (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Pa. New Cumberland (B) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Calif. Burlingame (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Va. Fairfax (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

Calif. Pomona (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

▲ N. Y. New York (B) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

LOW BIDDERS

Mass. Brookline Layne-New York Co., Inc., New York, N. Y. ... $210,524

▲ Wash. Fall River Layne-New York Co., Inc., New York, N. Y. ... $1,531,720

N. H. Laconia Layne-New York Co., Inc., New York, N. Y. ... $1,531,720

PROJECTS COVERED

Projects—By Size

Classes of Construction

Stages Reported

Symbols and Abbreviations Include:

▲

Mass. Boston (C) Layne-New York Co., Inc., New York, N. Y. ... $600,000 ... CD 7-31

N. Y. Poughkeepsie Const. Co., Inc., Albany, N. Y. ... $274,990

Tex. Cockrell Hill (C) Layne-Texas Co., Houston, Tex. ... $52,200

Wash. Seattle (C) Layne-New York Co., Inc., New York, N. Y. ... $53,335 ... $66,665

CONTRACTS AWARDED

Calif. Sierra Pure Water Sanitary Dist. (C) Layne-New York Co., Inc., New York, N. Y. ... $53,485 ... CD 5-31 ... under L.B.

Calif. Santa Paula (C) Layne-New York Co., Inc., New York, N. Y. ... $213,005

Kan. Kansas City Layne-Western Co., Houston, Tex. ... $222,

Ore. Salem Layne-Western Co., Houston, Tex. ... $469,434

Tex. Kilgore Layne-Texas Co., Houston, Tex. ... $104,278

Tex. Kilgore Layne-Texas Co., Houston, Tex. ... $110,000 ... CD 7-31

BRIDGES

BIDS ASKED

D. C. Wash. (C) A. W. Tate Const. Co., Houston, Tex. ... $224,440 ... $187,023 ... CD 7-31

LOW BIDDERS

California (S) Dept. Public Works, Sacramento, Aug. 17 ... Los Angeles ... $511,770 ... CD 7-31

California (S) Dept. Public Works, Sacramento, Aug. 17 ... $124,418 ... $50,808 ... CD 7-31

Texas (S) Texas Highway Dept., Austin, Aug. 23 ... $71,594 ... CD 8-4

CONTRACTS AWARDED

Maine (S) Maine Dept. of Transportation, Augusta ... $49,153

N. J. Monmouth Co., Freehold ... $48,327

Oregon (S) Oregon State Highway Dept., Salem ... $127,641

Washington (S) Washington State Highway Dept., Olympia ... $68,905

Alaska (T) Alaska Road Commission, Juneau ...

STREETS AND ROADS

BIDS ASKED

Tex., Dallas (U.S. 77 and spur) and City of Dallas, and State Hy. Comm. of Tex., Austin, 2.223 mi. Central Expressway from N. Main Sts. to Forest Ave. and Junction of Plano Rd. and Forest Ave. to E. Mockingbird Ln. (S.P. 57-5-25) (Fed. Aid Proj. DP-1(3)) (Dallas Co.) Apr. 25 (Bids Invited)

LOW BIDDERS

Calif., San Francisco-Oakland Bay Bridge, Bridge Dir. of Public Works, San Francisco, and Div. of Bridges, Dept. of Public Works, Sacramento, Toll Deck Repairs, Various Locations, Contra Costa, Alameda and San Francisco Counties, Apr. 25 ... $70,075.

†Colorado, City and County of Denver, Denver, Alterations to Fire Station No. 1, 1325 Stout St., Denver, Apr. 25 ... $92,870

Colorado, State Hy. Dept., Denver, Grading, Structures and Surfacing on Federal Aid Secondary Route 1, Section 1, Between Denver and Arvada, Jefferson Co., Apr. 25 ... $99,165

Colorado, State Hy. Dept., Denver, Grading, Structures and Surfacing on Federal Aid Secondary Route 1, Section 2, Between Arvada and Northwestern Jct. with U.S. 287, Jefferson Co., Apr. 25 ... $109,067

Ill., Rockford, City Lib. Bd., Rockford, Addition to Public Library, Apr. 25 ... $60,736

Maine, State Hy. Comm., Augusta, Apr. 26 (3 projects) ... $204,726

Bridge Limits Corp., Augusta, Apr. 26 ... $187,720

Maryland, State Rd. Comm., Baltimore, Zone 2, Anne Arundel and Howard Counties, Apr. 25 (3 projects) ... $439,830

Richardson Asp. Surfacing Co., Baltimore, Asphalt Surfacing on Various Roads in Anne Arundel Co., Apr. 25 ... $93,401

S. Side Sec. A, Fairview Co., Annapolis, Grading, Drainage and Paving on Various Streets in Fairview Subdivision, Anne Arundel Co., Apr. 25 ... $57,322

Maryland, State Rd. Comm., Baltimore, Zone 2, Anne Arundel and Howard Counties, Apr. 25 (3 projects) ... $324,000

New Hampshire, State Hy. Dept., Concord, Apr. 26 (3 projects) ... $171,667

O., Columbus, Ohio Turnpike Comm., Columbus, Apr. 25 (3 projects) ... $2,212,157

▲ Pennsylvania, Turnpike Comm., Harrisburg, Apr. 25 (3 projects) ... $172,998

▲ Texas, State Hy. Dept., Austin, Flexible Base and Bituminous Surface Treatment on Various Roads in Various Counties, Apr. 25 (3 projects) ... $438,854

$146,104

$42,410

$225,640

$111,927

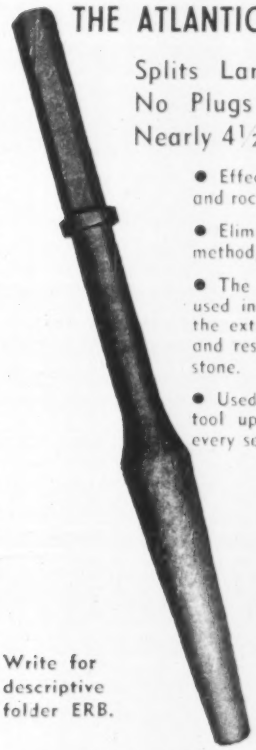
ATLANTIC Pneumatic TOOLS

Use with your standard power pavement equipment . . . .

THE ATLANTIC PNEUMATIC ROCK BREAKER

Splits Large Rocks and Boulders quickly
No Plugs and Feathers — No Explosives
Nearly 4 1/2 times faster

- Effective quick action in removing stones, boulders and rocks from excavations and ditches.
- Eliminates the slow and costly plug and feather method, and the risky and troublesome use of explosives.
- The specially heat-treated Atlantic Tool Steel used in the Atlantic Pneumatic Rock Breaker gives it the extreme toughness to withstand the severest usage and resist breakage regardless of the hardness of the stone.
- Used with standard power pavement breakers. No tool upkeep. Tougher than any stone. A size for every service.



Write for descriptive folder ERB.

Specialists in Tool Steels for chisels, drills, blacksmith tools and Alloy Steels for axles, bolts, pins, pistons and shafts.

Non-tempering tool steels for greater safety and speed.

ATLANTIC STEEL CORP. 1775 BROADWAY, N. Y. 19

UNDERPINNING AND FOUNDATION CO
FOUNDED 1909

FOUNDATIONS

PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS

No Job Too Large - None Too Small

ENGINEERS & CONTRACTORS
155 EAST 44th STREET, NEW YORK

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
THE HAYWARD CO., 38-50 Church St., N. Y.

CONTRACTORS' FIELD OFFICE TRAILER
Designed by Road Contractor
26' Aluminum Body—8' Wide
2 Rooms—2 Built-in Desks
1 Drafting Table—Built-in
Letter Files—Cabinets—
Closets—Drawers—etc.
Price $2600.00 f.o.b. Baltimore
TRAILER VILLAGE, INC.
8645 Pulaski Highway, Baltimore 21, Md.
Phone Essex 2233

VACUUM CONCRETE

Most economical to use for
PRECAST WALLS, FLOORS, ROOFS, BEAMS and COLUMNS—
IT MULTIPLIES THE SPEED

Vacuum Lined Forms can be
RE-USED AS MANY AS 8 TIMES IN ONE DAY
VACUUM HANDLING EQUIPMENT
Strips castings from molds and handles them without breakage

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

EARTHWORK, WATERWAYS

BIDS ASKED

AIRPORTS

PUBLIC BUILDINGS

COMMERCIAL BUILDINGS

construction
STEEL
Quick Delivery

Nearby Stocks Include:

REINFORCING BARS and accessories
STRUCTURALS—channels, angles, beams, etc.
PLATES—sheared and U M, Inland 4-Way Floor Plate
SHEETS—many types & coatings
TUBING—incl. welded structural
EXPANDED METAL—std. & flattened
STEEL SPIRALS, CAISSON RINGS, ETC.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

GUNITE
for
Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos
Get in touch with us for engineering data and estimates
GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

Fla. Ocala CHURCH, etc. B.A. Arnold & Co., First National Bank Bldg., Ocala, Fla. Arch. Rogers & Wagner, Ocala, Fla. Mason work, concrete and excavation. Bids $100,000 up. Q.

▲ Tex. Fort Worth SCHOOL B.A. Arch. Owner, Fort Worth Bldg. Bds., Fort Worth, Tex. Arch. Wyatt C. Hedrick, Fort Worth, Tex. Plans deposit $50. Q.

Ill. Chicago APARTMENT Bids Asked. Owner, Armstrong & Chamberlain, 222 W. Monroe St., Chicago, Ill. Arch. Alfred S. Alschuler, Chicago, Ill. Gen. contract. Q.

Ill. Chicago APARTMENT Bids Asked. Owner, Alfred S. Alschuler, Chicago, Ill. Arch. Alfred S. Alschuler, Chicago, Ill. Gen. contract. Q.

Ill. Naperville SCHOOL A. Bids Asked. Owner, Community High School Dist. No. 203, Naperville, Ill. Arch. Perkins, Wheeler & Will, Chicago, Ill. Gen. contract $250,000. Q. 1-51

LOW BIDDERS

▲ Tex. Fort Worth SCHOOL Bids Opened. Owner, Independent School Dist., Fort Worth, Tex. Arch. Wyatt C. Hedrick, Fort Worth, Tex. Gen. contract $1,250,000. Revised plans.

CONTRACTS AWARDED

▲ Mass. Boston GARAGE—Subway. Owner, Boston Transit Authority, Boston, Mass. Arch. Stone & Webster Engineering Corp., Boston, Mass. Gen. contract $2,500,000.

▲ Pa. Bristol SCHOOL. Owner, Bristol Township School Dist., Bristol, Pa. Arch. Ballinger Co., Philadelphia, Pa. Gen. contract $1,456,000.

▲ Pa. Philadelphia SCHOOL. Owner, Philadelphia Board of Education, Philadelphia, Pa. Arch. Irwin T. Catharine, Philadelphia, Pa. Gen. contract $2,111,305.

▲ Tex. Dallas SCHOOL. Owner, Dallas Independent School Dist., Dallas, Tex. Arch. Lang & Witchell, Dallas, Tex. Gen. contract $9,000,000.

▲ Tex. Houston SCHOOL. Owner, Houston Independent School Dist., Houston, Tex. Arch. Kenneth Franzheim, Houston, Tex. Gen. contract $1,400,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

O. Miamisburg ... B.A. ... Arch. ... Gen. contract. Q.

Ga. Brunswick ... B.A. ... Arch. ... Gen. contract. Q.

Ill. Peoria ... Arch. ... Gen. contract. Q.

+ Wash. Anacortes Area ... Arch. ... Gen. contract. Q.

+ Colorado ... Arch. ... Gen. contract. Q.

+ South Dakota ... Arch. ... Gen. contract. Q.

▲ Ky. ... Arch. ... Gen. contract. Q.

Ohio Wilmington ... Arch. ... Gen. contract. Q.

Ohio Wilmington ... Arch. ... Gen. contract. Q.

Ill. Maywood ... Arch. ... Gen. contract. Q.

Ill. St. Charles ... Arch. ... Gen. contract. Q.

Ill. ... Arch. ... Gen. contract. Q.

N. J. Camden SALES and SERVICE. B.A. Assets Bailey & MacIvaine, agents, 222 Market St., Camden, Assets and service for Assets Motor Realty Co., 31 Market St., Camden, N. J. Bldg. Approx. $100,000.

Pa. Philadelphia SALES and SERVICE—B.A. Assets Benjamin Franklin Parkway at 22 Ave., sales and service. Approx. $250,000. Architect plans. Frank White, 2016 Walnut St.

Pa. York PLANT. Bids Asked—John B. Hamme, architect, 124 E. Philadelphia St., plant addition for Blue Bird Mfg. Co., 600 N. Hartley St., $125,000. Jacob Schlosser, 28 E. Jackson St., York, Pa., engr.

Ont. Sutton WAREHOUSE. Bids Asked—Brewers Warehousing Co., Ltd., 1 King St. W., Toronto, Ont. For 1 story, 75 x 150 ft. Concrete block warehouse.

UNCLASSIFIED

BIDS ASKED

Iowa RURAL DISTRIBUTION LINES—B.A. 9/6—Corn Belt Power Co., Humboldt, Iowa, 25 mi. 69 kv. line, 12 mi. 12.5 kv. line, 4 kv. step-down substation, Corn and Dickinson Counties. Assets $1,500,000. Harvey Eng. Co., Hershey Bldg., Muscatine, Iowa.

Nebraska RURAL DISTRIBUTION LINES—B.A. 9/6—Wayne, Cedar, Dixon and Dakota Rural Public Power Dist., Wayne, Neb. 93.5 mi. distribution lines, Antelope and Knox Counties. $90,000. Raymond H. Reed & Co., Omaha, Neb.

Que. Ile Aux Grues WHARF. B.A. 9/6. Acting Secy., Harbour Board, Quebec, Que. Wharf repairs. $15,000. Plans deposit $20. R.

Fla. Jacksonville WATERBOARD. B.A. 9/7—Water Board, Jacksonville, Fla. Arch. Engr. Consultant—A. & H. Eng. Co., Jacksonville, Fla. Arch. Engr. Plans

+ Nebraska Wyoming TRANSMISSIONS—B.A. 9/7—Missouri Basin System Project, Omaha, Neb. Transmission lines and substations. Phase Wyo. Sect. 115-140 mi. SR 9/51

Wis. Milwaukee STRUCTURAL. B.A. 9/7—Milwaukee Gas Light Co., Milwaukee, Wis. Arch. Engr. Plans

Que. Ste Anne de Sorel ... B.A. 9/7—Arch. ... Gen. contract $60,000.

Ont. Brantford DAM. B.A. 9/8—Grand River Conservation Commission, Box 729, Brantford, Ont. Arch. Engr. Plans

California Pacific ... B.A. ... Arch. ... Gen. contract. Q.

Fla. Jacksonville ... B.A. ... Arch. ... Gen. contract. Q.

Ala. Mobile ... B.A. 9/13—Arch. ... Gen. contract. Q.

+ Nebr. Beaver ... B.A. 9/21—Arch. ... Gen. contract. Q.

La. Cane Pole ... Arch. ... Gen. contract. Q.

CONTRACTS AWARDED

▲ ... Arch. ... Gen. contract $1,500,000.

▲ N. C. Washington ... Arch. ... Gen. contract $1,000,000.

PROPOSED PROJECTS

WATER SUPPLY

SEWERS, WASTE DISPOSAL

BRIDGES

STREETS AND ROADS

AIRPORTS

PUBLIC BUILDINGS

COMMERCIAL BUILDINGS

INDUSTRIAL BUILDINGS

UNCLASSIFIED

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Fla. Sarasota B.A. 9-13 City, Sarasota. Distrib. system & water supply work. Approx. $2,000,000. Plans deposit $200. Smith & Gruzen, Engrs. Bldg., Jacksonville. Zone 1. Knight, CD 8-20.

N. S. Trenton B.A. 9-13 Nova Scotia Power Comm., Halifax. 4,100 ft. long 8" steel water supply line. Plans deposit $15. H. Fenwick, c/o same, engr.

Ga. Winder B.A. 9-7 City, W.W. Cutts, J. B. Mayes, Jr., 22 Marietta St. Bldg., Atlanta. Bids extended date.

Tex. Cibolo B.A. 9-13 Guadalupe County Water Control & Improv. Dist. 2, Cibolo, water supply well, elevated tank. Frank T. Dwyer, 122 W. Penn St., San Antonio, engr.

Tex. College Station B.A. 9-13 Agricultural & Mechanical College of Texas, College Station, 2 elevated tanks and transmission lines. Approx. $1,500,000. Plans deposit $25. Howe, A. Haines, 4104 Gaston Ave., Dallas, engr. CD 8-20.

LOW BIDDERS

Ala. Rainbow City Town, W.W. system, from Weaver to Gadsden. $120,525.

Calif. Oakland East Bay Municipal Utility Dist., 512 16 St. Aug. 23. 3 Mg capacity prestressed concrete Bayview Reservoir, Hays Canyon & Knowland Rds., El Cerrito. $89,550. CD 8-6.

Conn. Middlefield Town, Tuttle Rd., City Hall, pumping station and well house. Hennessy Engineering, Inc., 1 Constitution Plaza, Hartford. $72,869.

Mass. Worcester City, 455 Grove St., City Hall, Aug. 23. 1 Mg water storage tank, 1,200 ft. water mains, Mill Brook Rd., Mass. Ave. $67,641.

Tex. Daingerfield City, Daingerfield Water Improv. Dist., 1 elevated tank, water mains and extensions. Aug. 15. Walter Bracken, Engr., Texarkana. CD 8-20. $30,000.

Tex. Dallas City, City Hall, Aug. 25. elevated steel water tank and 1½ mi. water mains. Bridge & Tank Co., Memphis, Tenn., Dr. $295,800. Elec. 1.

Va. Pulaski Town, Parish Ave., 2 elevated steel tanks, 1 ft. diameter, 1 ft. high. $141,318.

CONTRACTS AWARDED

Ala. Bay Minette City, 1 mi. 6" & 8" C.I. & A.C. water mains. $154,478.

La. Hahnville St. Charles Parish Waterworks Dist. 1, Hahnville City, Water & Sewer Comm., Hahnville, 1 elevated tank, 1 ground storage reservoir, 4 booster pumps, 4 mi. water mains. $143,045. $674,159. $35,256.

Mich. Kaukauna Kaukauna Water Utility, 1 elevated tank. $112,000.

Va. Forsyth Town, water system. $40,000.

Tex. Exxon Tank, 2 elevated steel tanks, 1 ft. diameter, 1 ft. high. $30,000.

Tex. Crockett City, 1 elevated steel tank, 1 ft. diameter, 1 ft. high. $50,000. Jno. J. Ralls, 211 E. Houston, engr.

Tex. Fort Worth City, City Hall, 1 elevated steel tank, 1 ft. diameter, 1 ft. high. $40,000.

Tex. Houston City, City Hall, 1 elevated steel tank, 1 ft. diameter, 1 ft. high. $17,000.

SEWERS, WASTE DISPOSAL

BIDS ASKED

▲ W.Va. Port Haven B.A. 9-13 [illegible]

N.Y. Brooklyn B.A. 9-13 [illegible]

Tex. Dallas B.A. 9-13 [illegible]

B.C. Boundary Bay B.A. 9-13 [illegible]

Calif. Ceres B.A. 9-7 City, City Hall, sewage lines, including sewage pump sta., etc. Approx. $50,000. Plans deposit $25. Harold W. Jorgensen, 2206 Maple St., Los Angeles, engr.

Wis. Elva B.A. 9-13 Village, sanitary sewer, and sewage treatment plant. Plans deposit $10. Dietz, Engr. Co., 101 Main St., Lacrosse, engr.

Ont. Grimsby B.A. 9-13 S. Bourne, town clk., sanitary sewer, 2,243 ft. sewer including 10 in. to 24 in. Lexington Ave., Queen Elizabeth Way, Robinson St., John St., Maple Ave., Ann Ave. Approx. $125,000. Mac-Kay & Mackay, 25 Hughes St., Hamilton, engrs. CD 9-6-50.

Va. Wet Point B.A. 9-13 Town, West Point sewage treatment plant, pumping station, and sewer system. Approx. $350,000. W. Wood Hoyt & Assocs., engrs.

LOW BIDDERS

Calif. Oakland East Bay Municipal Utility Dist., 512 16 St. Aug. 11. 20 mgd capacity, Encinal sewage pumping plant, 1,000 ft. force main, Encinal Ave. to Alameda Creek. Approx. $214,526. CD 7-26.

Ky. Harrodsburg City of Harrodsburg, Aug. 11. 1 Mg ground storage reservoir, elevated steel water tower, water mains, Woodlawn Ave., Lexington, Ave. $125,000. CD 8-2.

Mass. Ludlow Town, 8" sewerage system, sewers, Main & Piedmont Sts., 24" Pipeline St., Hyde Park. $135,261. Taylor & Burns, 184 High St., Holyoke, engrs.

Tex. Daingerfield City, 2 portable chlorinated rate of flow sewage ejectors, Aug. 15. Walter Bracken, Engr., Texarkana. CD 8-20.

Tex. Houston City, City Hall, 900 Bagby St., Aug. 24. Sanitary sewers, Lockwood, Eastwood & Country Club Drives, Lockwood Drive Outfall Sewer, Extension of Dowling Street Outfall Sewer, Extension of Lockwood Drive Outfall Sewer, Extension of Country Club Drive Outfall Sewer, Extension of East

THE RIGHT COMBINATION FOR DEPENDABLE PIPE LINES

Naylor Wedge-Lock Coupling Joins Naylor Lightweight Pipe to Do a Better Job for Contractors

The Naylor one-piece, positive-type Wedge-Lock Coupling slips over the grooved or shoulder ends on Naylor pipe to provide the fastest and easiest method yet devised for connecting pipe. A hammer is the only tool needed. Joints can be made up with only one side of the pipe in the open. Other advantages include tight, leakfree joints, less power loss, smoother operation, more consistent delivery, long service life and high re-use value. Add to this, the outstanding performance of Naylor lightweight pipe and you have a perfect combination for construction service. Pipe sizes 4" to 30" in diameter—thickness from 14 to 8 gauge. Write for Catalog No. 44.

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

dewater the Complete way

Wherever there's ground water, only "Complete" gives Complete assurance of Complete elimination of the hazard. These patented fluted tube wellpoints remove more water faster . . . more easily, more efficiently, most economically!

Write today for "Complete" catalog Dept ER

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11th STREET
LONG ISLAND CITY, N. Y.
Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA

COMPLETE WELLPOINT SYSTEMS
FOR SALE OR RENT

EPPINGER AND RUSSELL CO.
Wood Preservers Since 1878
80 Eighth Ave., New York 11, N. Y.
PRESSURE TREATED
TIES—POLES—PILING—LUMBER
WITH
Creosote or
Chromated Zinc Chloride
TREATING PLANTS
Jacksonville, Fla. Norfolk, Va.
Eddington, Pa.

McKIERNAN-TERRY
RUGGEDLY-BUILT
PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubborn set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 10 double-acting hammers and 5 single-acting hammers. Write for free Bulletin.
Also builders of coal and ore bridges, bulk material unloaders, bridge operating machinery, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
11 Park Row New York 7, N. Y.

Wis., Apt. Adm. [illegible] $143,806

▲ Alberta, Province of Alberta, Department Bldgs., Ed. [illegible] $121,262; [illegible] $1,654,035 CD 12-3-44

EARTHWORK, WATERWAYS

LOW BIDDERS

Ark., Lake Village—Arkansas Levee & Fill Comm., Little Rock, [illegible] Lake Village $96,250. CD 7-19-49

† Indiana [illegible] $119,671. CD 8-16-49

La., Metairie (Jefferson P.O.), 4th Jefferson Drainage Dist., [illegible] $39,824. CD 7-20-49

▲ Miss., Gulfport—City, [illegible] $409,261; [illegible] $108,477. CD 8-2-49

[illegible] $211,000. CD 7-28-49

CONTRACTS AWARDED

▲ †Louisiana—U. S. Eng. Dept. of Pilotage St., New Orleans, [illegible] $5,269,069. Bidders 6/9/49. CD 8-2-49

Tex., Dallas—C. J. Lee, 2011½ Jackson St., Dallas, [illegible] $42,000

AIRPORTS

BIDS ASKED

Mich., Lansing—AIRPORT—B.A. 9-7. State Liaison Officer, National Guard Bureau, State Dept. Aeronautics, Capitol City Airport, [illegible] grading, [illegible] ground cover, intensity runway lights, electric [illegible] wind cone, etc. Plans deposit $5 (no refund). CD 9-12-47

† Alaska, Kodiak—TAXIWAY, RUNWAY—B.A. 9-12-49. Kodiak Municipal Airport, Kodiak. Taxiway and extend runway to [illegible] Plans deposit $5 (no refund). CD 9-12-49

Ala., Huntsville—RUNWAY—B.A. 9-14-49. [illegible] CD 8-2-49

† Alaska, Kodiak—TAXIWAY, RUNWAY—B.A. 9-12-49. [illegible] CD 9-12-49

LOW BIDDERS

Ill., Rock Falls—[illegible] $526,436. CD 8-2-49

CONTRACTS AWARDED

Va., Roanoke—AIRPORT—[illegible] $317,432. CD 7-28-49

Neb., North Platte—[illegible] $100,360. CD 7-28-49

Tex., Midland—[illegible] $51,000. CD 7-28-49

Wash., Bellingham—[illegible] $60,000. CD 7-28-49

LATIN AMERICA

▲ Brazil, Sao Paulo—[illegible]

AMERICANS ABROAD

Australia—[illegible]

PUBLIC BUILDINGS

BIDS ASKED

Ga., Atlanta—SCHOOL—B.A. 9-15—Fulton County Bd. of Education, Norman E. Stambaugh, archt., Rhodes Bldg., Atlanta. Elementary & District Consolidated College Park. Plans deposit $50. CD 7-12-49

Mo., Blue Springs—[illegible] Plans deposit $50. CD 7-19-49

Ont., Ottawa—[illegible] Plans deposit $50. CD 7-19-49, under LB.

Calif., Patton—[illegible] Plans deposit $50. CD 7-19-49

▲ Ill., Carbondale—SCHOOL, etc.—B.A. 9-7. State Superintendent Schools, Life Science Bldg. and Animal Industry Bldg., Springfield. Plans deposit $1,500 (refund). Southern Illinois University, Univ. No. CD 7-19-49

La., Lafayette—WAR MEMORIAL—B.A. 9-7. Lafayette Parish Police Jury, Lafayette, [illegible] Plans deposit $50. A. Hays Town Mo., Baton Rouge, archt. CD 7-27-49

Mass., Concord—SCHOOL—B.A. 9-7. Town, Lawrence Mooney, Gen. Delivery, Concord. Plans deposit $50. Sanborn, Orchard & Bryden, Wells & Ames, 53 State St., Boston, archts. CD 7-27-49

† N. M., Las Cruces—TELEPHONE PLANT—B.A. 9-6. Eng. & Army Depot Sect., Fort Sam Houston, [illegible] outside plant [illegible] at White Sands Proving Ground, [illegible] $45,000. CD 7-19-49

† New York—BUILDINGS, etc.—B.A. 9-7. [illegible] Lafayette St., New York, Zone 13, [illegible] Bldg. CD 7-27-49

O., Oxford—DORMITORY WING—B.A. 9-7. [illegible] Comptroller, Dept. P, Wm. Oxley Thom Library, Oxford. Women's Dormitory South Wing No. 2 at Miami University. Charles F. Cellarius, 901 Provident Bldg., Cincinnati, archt. H. G. Allen, Jog Dorm. Bldg., Oxford, engineer. Plans deposit $5. CD 8-24-49

Okla., Oklahoma City—HOSPITAL—B.A. 9-7—[illegible] 801 N. E. 13 St., Zone 4, [illegible] CD 8-24-49

Tex., College Station—ADMINISTRATION—B.A. 9-7. Agricultural & Mechanical College of Texas, College Station, [illegible] Auditorium Bldg. $373,000. Plans deposit $50. H. Overcher & Allen, 1202 Dennis St., Houston. CD 11-29-49

Tex., Tyler—SCHOOL—B.A. 9-7. Tyler Independent School District, [illegible] $250,000. Plans deposit $50. Lindsey & Broadhurst, 401 S. Broadway, at W. 5th St., Tyler. CD 7-19-49

Va., Charlottesville—POWER PLANT, etc.—B.A. 9-7. [illegible] of Virginia, W. Duncan Jr., pres., University of Virginia, [illegible] power plant, [illegible] Bank Bldg., Richmond. CD 10-11-49

Ont., Barrie—[illegible] Plans deposit $50. CD 12-8-49

Mass., Abington—[illegible] CD 7-19-49

Mass., Holyoke—[illegible] CD 7-19-49

Mass., Wareham—[illegible] CD 7-19-49

N. D., Grand Forks—[illegible] CD 7-19-49

Wis., Fennimore—[illegible] CD 7-19-49

Pa., Brentwood—[illegible] CD 7-19-49

Va., Lynchburg—[illegible] CD 7-19-49

Wis., West Allis—HIGH SCHOOL—B.A. 9-5—[illegible] West Allis-West Milwaukee Area Joint S. D. No. 1. [illegible] $1,780,000. CD 7-19-49

COMMERCIAL BUILDINGS

BIDS ASKED

Miss., Meridian

Idaho, Boise

Okla., Oklahoma City

Ill., Chicago

Ill., Hinsdale

Pa., Phila.

SOON LETS CONTRACT

Ga., Hapeville

Pa., Phila.

LOW BIDDERS

Pa., Upper Darby

S. D., Hot Springs

Wash., Seattle

CONTRACTS AWARDED

Ala., Birmingham

▲ Calif., Culver City

▲ Calif., Ford Ord

Calif., Hayward

▲ Calif., La Mesa

Calif., Los Angeles

Calif., Los Gatos

Calif., Redondo Beach

Calif., San Francisco

Del., Claymont

Fla., Miami

Fla., Miami

Ga., Atlanta

Ga., Macon

Ill., Chicago

Ill., Chicago

Ill., Decatur

Kan., Mission

Ky., Louisville

▲ Md., College Park

▲ Mich., Dearborn

Mich., Pontiac

Mich., Saginaw

Miss., Biloxi

Miss., Jackson

Mo., Clayton (St. Louis P. O.)

▲ Mo., Kansas City

N. J., Camden

▲ N. J., Camden

▲ N. J., Hamilton Twp. (Trenton P. O.)

N. J., Lawrenceville

▲ N. J., Little Falls

N. J., Ocean City

N. J., Palmyra

N. J., Pennsauken

▲ N. J., Smith Plainfield

▲ N. J., Springfield

N. J., Teaneck

N. Y., Bayside — HOUSES — E. H. & C. Homes, c/o S. W. Katz, archt., 527 Fifth Ave., New York. Zone 7, 62 one family houses on 218 and 219 Sts., north and south of 46 Ave. Owner builds. $372,000.

N. Y., Bellmore—SHOPPING CENTER—Bellmore Center Corp., c/o A. H. Salkowitz, archt., 37-40 82 St., Jackson Heights. 250x404 ft. shopping center Bedford Ave. at the southeast corner of Oak St. Owner builds. $500,000.

▲ N. Y., Bethpage — HOUSES — Air Homes, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica. 275 one family houses on 45 acre tract on State Hy. No. 107. Owner builds. $2,000,000.

▲ N. Y., Bethpage — HOUSES — Bethpage Developers Corp., c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica. 225 houses on 45 acre site on State Hy. No. 107. Owner builds. $1,500,000.

▲ N. Y., Bethpage—HOUSES—Manlee Builders, c/o Marvin & York, archts., 3044 141 St., Jamaica. 210 one family houses to be known as Pine Tree Manor on 30 acre site on Stewart Ave. Owner builds. $1,250,000.

▲ N. Y., East Meadow—HOUSES—Pleasmeadow Assoc., Inc., c/o John W. Buxton & Assoc., archts., 164-18 Jamaica Ave., Jamaica. 200 one family houses on 60 acre tract on north side of Merrick Turnpike near Wantagh Causeway. Owner builds. $3,000,000.

▲ N. Y., East Meadow—HOUSES—Meadow Gardens Homes, c/o Alwin Lasseru, jr. archt., 114-55 Queens Blvd., Forest Hills. 145 one family houses on 40 acre site on Newbridge Ave., north of Jerusalem Rd. Owner builds. $1,250,000.

▲ N. Y., Garden City—HOUSES—Moss & Sons, Bellmore. Rd., Bellmore. 120 one family houses on New Hyde Park Rd. Owner builds. $1,500,000. Anthony & Dominick Salvati, 26 Court St., Brooklyn, Zone 2, archts.

N. Y., Hastings—APARTMENTS—Communities Redevelopment Corp., c/o Raymond & Rado, archts., 101 Park Ave., New York, Zone 17, garden apartments on 4 acre site on west side of Maple Ave. to Uohn W. Hood Ave., north of Roberts Place, New York, Zone 23. Assoc. $750,000.

N. Y., Hempstead—HOUSES—Brentwood Estates, c/o John Gurney, archt., 16-15 Jamaica Ave., Jamaica. 53 houses on Merrick Ave. Owner builds. $500,000.

▲ N. Y., Hempstead—HOUSES—Knickerbocker Homes, c/o Oscar Silverstone, archt., 154 Pierrepont St., Brooklyn, Zone 2, 140 houses at Devonshire Ave. and Nassau Rd. Owner builds. $1,500,000.

N. Y., Howard Beach—HOUSES—Sherman Homes, c/o Alwin Lasseru, jr., archt., 114-55 Queens Blvd., Forest Hills. 84 one family houses in area bounded by 159 Ave., 80 St., 154 Ave., and 92 St. Owner builds. $712,000.

▲ N. Y., Jamaica—APARTMENT—Wexford Const. Co., Inc., Irving & Casagrande, archts., 154 Pierrepont St., Brooklyn, Zone 2, 8 story apartment on west side of Parsons Blvd., between 71 Parkway and 161 St. Owner builds. $1,440,000.

N. Y., Kew Gardens—HOUSES—Bengor Builders, c/o Samuel Paul, archt., 165-10 Jamaica Ave., Jamaica. 44 one family houses 72 Ave., 72 and 76 Rds., Queens. Owner builds. $340,000.

▲ N. Y., New York—[illegible] Varick St., Zone 14, to George A. Fuller Co., 147 Milton Ave., Jamaica. $4,500,000. Bids 8/22. CD 7/27.

N. Y., Uniondale—HOUSES—Mastic Homes, c/o A. [illegible] Ave., and South Bldg., Brooklyn, Zone 2. 124 one family houses on Jerusalem Ave., Uniondale. Owner builds. $250,000.

▲ N. Y., Woodmere—HOUSES—[illegible] Ave., Jamaica. 243 one family houses on 24 acre site on Peninsula Blvd. Owner builds. $4,000,000.

▲ N. Y., Yonkers—APARTMENT—[illegible] New York, Zone 21, to [illegible] Ave., Bronx, New York. $1,000,000.

O., Toledo—[illegible] Owner builds. $250,000.

Pa., Boothwyn—[illegible] Owner builds. $400,000.

Pa., Chester—[illegible] $200,000.

Pa., Eddystone (Philadelphia P. O.)—[illegible] $250,000.

Pa., Flourtown—[illegible] $250,000.

Pa., Johnstown—[illegible] $250,000.

Pa., Lansdowne—[illegible] $350,000.

Tex., Dallas—SHOPPING VILLAGE—S & E. Corp., Box 2349, shopping village, Pleasant Grove on Buckner Blvd. Owner builds. $450,000.

Tex., Houston—APARTMENTS—Wm. F. Appelt & Assoc., 2401 Dickey St., four 30 unit apartments. Owner builds. $725,000.

Tex., Houston—SHOPPING CENTER—Wm. F. Appelt & Assoc., 2101 Dickey St., shopping center. Own forces. $375,000.

Tex., Houston—DWELLINGS—Carolina Gardens Development Co., 2401 Bridgett St., 35 dwellings, west of entery of Scott Rd. each of Almeda Rd. on Carolina Gardens Building Co., 241 Bridgett. $280,000. CD 7/27.

Tex., Houston—DWELLINGS—C. L. Fitzhenry, 1105 Archer St., 33 dwellings. Owner builds. $335,000. CD 8/8.

Tex., Houston—DWELLINGS—Garden Oaks Realty & Building Co., 4331 Elva Rd., 50 dwellings in new area of Oak Forest. Owner builds. Approx. $525,000. CD 7/27.

Tex., San Antonio—DWELLINGS—Jackson Terrace, Inc., 4214 West Ave., six dwellings, Vonie Jackson and Landa Rds., to Houston Woodrow Co., 1219 West Ave. Approx. $430,000. CD 8/10.

Tex., Houston—DWELLINGS—Lawrence O'Donnell & Assoc., 4102 Homer Rd., 100 low cost homes. Own forces. $435,000. CD 7/31.

▲ Tex., Houston—OFFICE—Sam Houston Hotel, Main and Walker Sts., addn., connection and remodel to existing 10 story hotel, San Jacinto Hotel into an office bldg. to Douglas Construction Co., 716 N. Chenevert St. Approx. $1,750,000. Kenneth Franzheim, 2306 Crawford St.

Tex., Houston—DWELLINGS—Suburban Homes Realty Co., c/o Lawrence O'Donnell & Assoc., 4102 Homer Rd., 100 dwellings. Own forces. Approx. $465,000. CD 7/31.

Tex., Houston—HOUSING—Silvey Design Co., 4112 Avis St., 50 housing units. Owner builds. Approx. $250,000. CD 8/11.

Tex., San Antonio—DISPLEX—Quincy Lee & Assoc., Gunter Bldg., Dallas, to Torres Bros. Owner builds. Approx. $365,000. CD 6/23.

Tex., Waco—EDUCATIONAL CHAPEL—First Baptist Church, Waco. 2 story, limit, educational and chapel to McClellan-Bevan-McClellan, 2215 Franklin St. $517,392. Bids 8/11. CD 8/21, under LB.

▲ † Wash., Spokane—HOUSING, Dist. Air Force, Pentagon Bldg., Wash., D. C., construct, manage and finance, 200 houses and 574 duplexes at Spokane Air Force Base to Guthrie Constr. Co., 10518 Florida St. $8,600,000.

Alaska, Anchorage—CLUB—National Council of Young Men, Fountain Ave., c/o Morley & Mayer, archts., Lowman Bldg., 2 story 48x120 ft. addition to be to J. B. Anderson & Co., c/o Morley & Mayer, Seattle 1, Wash. $275,000. Est. $300,000. Bids 8/14. CD 8/11.

INDUSTRIAL BUILDINGS

BIDS ASKED

Que., Quebec City—[illegible] Patterson, Montreal, to [illegible] Dominion Textile Bldg., Montreal. 1 story with [illegible] sq. ft. Owner builds. Approx. $1,000,000. [illegible] Dominion Textile Co., Montreal. 1 story with [illegible] sq. ft. Owner builds. Approx. $1,000,000. [illegible] Dominion Textile Co., Montreal. 2 story 50x100 ft. Owner builds. Approx. $250,000. CD 7/26, under LB.

Del., Wilmington—[illegible] Assoc., Inc., Wilmington, to [illegible] Ave., Wilmington. Owner builds. Approx. $1,000,000.

Md., Baltimore—[illegible] Owner builds. $1,000,000.

CONTRACTS AWARDED

▲ Conn., Stamford—[illegible] Stamford, to [illegible] Owner builds. $1,750,000.

▲ Ill., Lansing—[illegible] Lansing, to [illegible] Owner builds. Approx. $1,000,000.

▲ Ind., Wabash City—[illegible] Wabash City, to [illegible] Owner builds. $300,000.

La., Charles City—[illegible] Charles City, to [illegible] Owner builds. $300,000.

Ky., Hopkinsville—[illegible] Hopkinsville, to [illegible] Owner builds. $150,000.

Mich., Bay City—[illegible] Bay City, to [illegible] Owner builds. $126,700.

Mo., St. Louis—[illegible] St. Louis, to [illegible] Owner builds. $1,000,000.

at 1025 Paul St., to A. H. Haeseler Building & Contracting Co., 2346 Palm St., Zone 7. $100,000. Hawthorne Finishing Co., 1035 Paul St., Zone 4, lessee. CD 10/24/49.

N. J., Camden—WAREHOUSE, etc.—Lowry-Rogers Co., 12 and Ferry Aves., Camden. 1 story 208x357 ft. brick, concrete, steel warehouse and office alterations to John D. Lawrence, 343 Hazel Ave., Westville, N. J. Approx. $150,000. Nelson L. Bauzenberger, 341 Ferry Ave., Collingswood, archt.

N. Y., Kew Gardens—GARAGE—Jack Goodstein Corp., c/o Lawrence Rothman, archt., 332 E. 144 St., New York, Zone 51. 2 story, garage and recreation room on west side of Kew Gardens Rd. between 83 Dr., and Lefferts Blvd. Owner builds. $250,000.

O., Toledo—WAREHOUSE—Donovan Wire & Iron Co., 805 Chicago St., 69x168 ft. warehouse for handling steel with overhead cranes at 810 Chicago St. to Stanford E. Thal, Inc., 149 Maumee St. Approx. $100,000.

▲ Okla., Ponca City—LABORATORY—Continental Oil Co., Ponca City. 3 story research laboratory to Wigton-Abbott Corp., 1225 South Ave., Plainfield, N. J. $2,250,000. CD 4/2/46.

▲ Pa., Pittsburgh—PLANT—Reick McJunkin Dairy Co., 1345 Forbes St. 1 and 2 story 212x241 ft. brick, tile & concrete plant to Gunite, Inc., 3011 Bigelow Blvd. Approx. $1,500,000. Bids 8/21. CD 8/15, under LB.

UNCLASSIFIED

LOW BIDDERS

Ala., Decatur—NATURAL GAS SYSTEM—City, Aug. 11, natural gas sys., Texas C. E. Adams, 3700 10 Ave., N., Birmingham. $795,000. CD 8/8.

▲ Que., Montreal—CHALET, etc.—City, J. A. Mongeau, City Eng., completion of chalet, bath house, etc., at St. Helens Island from J. P. Cartier, 429 Jean Talon St. W., Montreal. Approx. $2,007,582. CD 7/21.

CONTRACTS AWARDED

▲ Ala., Huntsville—NATURAL GAS SYSTEM—City, natural gas system, to P. A. Buchanan Const. Co., 618 Woodland Ave., S.W., Birmingham. $1,038,173. Bids 8/7. CD 8/16, under LB.

Calif., Long Beach—BERTHS—City Harbor Dist., 1333 El Embarcadero St., water and sprinkler lines, storm drains, retaining walls, etc., for Berths B, 9 and 10, Pier A, to Walter Dahring, 4335 California St., Long Beach. $61,761. A. J. Amar, port mgr. CD 4/14.

Fla., Miami Beach—SWIMMING POOL, Atlantic Towers Hotel, c/o contractor, to Euler Const. Co., 523 Michigan Ave., Miami Beach. $50,000.

▲ Ga., La Grange—LAKE DEVELOPMENT—Callaway Foundation, c/o John Leon Hoffman, Inc., Forsythe Bldg., Atlanta, lake development incl. golf course, water and sewer sys., club house, misc. force account. $1,000,000.

Ky., Paintsville—SWIMMING POOL—City, Paintsville swimming pool and bath house, to Jack Childers Const. Co., Cumberland. $91,515. Awarded 8/15. Brock & Johnson, 144 Bria St., Lexington, consult. eng. Lyle St., Lexington, engr.

▲ New Mexico-Arizona—GAS LINES—El Paso Natural Gas Co., El Paso, Tex., 24 in. gas transmission line, natural gas feeder lines. Approx. $750,000. Incl. 24 in. welded steel natural gas pipe to be carried between Farmington, N. M. and Topock, Ariz. Approx. $39,000,000. Own forces. CD 4/3/46.

▲ N. Y., Long Island City—RAILWAY TUNNEL—[illegible] Transportation Corporation of New York, N. Y., with St. Transportation Corporation of [illegible] Dr., Rt. 12A, [illegible] and [illegible] to Arthur A. Johnson Co. and Mason & Hanger, 285 Madison Ave., New York, Zone 17. $17,236,603. Bids 8/8. CD 8/25, under LB.

O., Toledo—[illegible] Owner builds. $52,400.

O., Wooster—[illegible] Dept. of Agriculture, Wooster, to [illegible] Ave., Wooster. $125,000. CD 4/27.

Tenn., Athens—NATURAL GAS SYSTEM—City, natural gas system, to [illegible] Owner builds. $443,372.

Tex., Beaumont—[illegible] Owner builds. $250,000. CD 8/14.

Tex., Freeport—GAS LINES—Independent Investment Co., natural gas lines, purchase and [illegible] Approx. $55,000.

Tex., Houston—[illegible] Dr., underground service duct sys. to [illegible] Owner builds. Approx. $40,000.

Que., Quebec City—SWIMMING POOL—Municipality, swimming pool on St. Sacrement, Grand Trunk & Canadian Ways, 40 Notre Dame des Anges, Quebec City. $54,942. Est. Homer Cote, city engr.

Sask., Yorkton—STREET LIGHTING, etc.—Municipality, [illegible] underground wiring, standards on [illegible] Ave., Broadway and Smith Sts., and to [illegible] Ave. Owner builds. $54,000. Est. H. Bailey, city engr.

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA DIRECTOR OF SANITARY ENGINEERING, D. C., August 3, 1950. SEALED PROPOSALS will be received in Room 500 District Building, 14th and E Streets, N. W., Washington 4, D. C., until 2:00 p.m., Daylight Saving Time, September 13, 1950, and then publicly opened and read, for SLUDGE DRYING AND INCINERATING EQUIPMENT, SEWAGE TREATMENT PLANT, Washington, D. C. Proposal forms, specifications and drawings may be obtained in the office of the Clerk, E. D. Room 427, District Building (Telephone National 6000, Extension 2278), upon the deposit of a certified check, in the amount of Fifty Dollars ($50.00), for each set, made payable to the Collector of Taxes, D.C. (929)

United States Department of the Interior, Bureau of Reclamation, Notice is hereby given that sealed bids on Specification No. VH-146 will be received at P.O. Box 250, Recreation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, September 5, 1950, and then publicly opened for furnishing and delivering Instrument Transformers for Shiney and Casper Substation Transformer Division, Nebraska-Missouri River Basin Project and Kendrick Project, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver 2, Colorado; R. J. Matthews, District Manager, P.O. Box 580, Casper, Wyoming. No charge to prospective bidders for copies of the specifications, to others $0.25 per copy, and returnable. (943)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids, in duplicate, will be received by Bureau of Reclamation, Boulder City, Nevada, September 28, 1950, and then publicly opened for furnishing labor and materials and performing all work for the installation of turbines, transformers, and equipment appurtenant thereto, at Units A1, and A2, Hoover Power Plant, back Y, and inspection of additional transformer circuits and terminal facilities for Hoover switchyard at Hoover Power Plant, Boulder Canyon Project, Arizona-California-Nevada. The work is situated at Hoover Power Plant, Boulder City, Nevada. Principal items are approximately: 2,500 cubic yards concrete, furnishing and handling 50,000 lbs. cement, furnishing and placing 1,000,000 lbs. reinforcing bars, erecting turbine and generator for units A1, A2, and A3, relocating transformer bank "Y", furnishing and installing miscellaneous items of electrical and mechanical equipment and other work. Time allowed for completion of the work is 270 days. Bidders may obtain bidding documents from the Director, Bureau of Reclamation, Boulder City, Nevada, or Building 1A, Denver Federal Center, Denver, Colorado. J. MICHAEL W. STRAUS, Commissioner. (945)

OFFICIAL PROPOSALS

Bids September 21, 1950 (948)

Toll Booths & Equipment

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS
CONTRACT NO. 19—ADMINISTRATION BUILDING, TOLL BOOTHS AND TOLL COLLECTION EQUIPMENT

Sealed proposals for construction of Administration Building, Toll Booths and Toll Collection Equipment for the Delaware Memorial Bridge over the Delaware River near Wilmington, Delaware, will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Commercial American Building, Wilmington, Delaware, until 12 o'clock noon, Eastern Daylight Saving Time, on Monday, September 18, 1950, and will be opened in public at that time. Immediately thereafter proposals will be publicly opened and read in the Council Chamber, Wilmington City Hall.

The entire work involves the following:

(1) Construction of a one-story brick, reinforced concrete and building administration building, 50 feet by 80 feet, and appurtenant work, including heating, lighting and plumbing facilities.

(2) Construction of five toll booths, with connecting canopies.

(3) Furnishing and installing toll collection equipment.

(4) Furnishing and installing electrical traffic and counting equipment.

(5) The construction of approximately 1100 feet of two (2) inch diameter water supply line.

Work on Contract 19 shall begin promptly after the execution of the contract. It shall be completed in accordance with the following schedule:

Administration Building Foundations, Exterior Walls and Roof, December 15, 1950.
Entire contract, May 15, 1951.

Monthly payments will be made for effects (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check in the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard Needles, Tammen & Bergendoff, 30 Liberty Street, New York 5, N. Y., upon deposit of $25.00. Plans and two copies of the Specifications may be obtained from the Engineers after August 21, 1950 upon payment of $25.00. Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing, and extra copies of the Specifications upon payment of $2.00 per copy.

All Plans and Specifications shall be returned to the Engineers and on such return $10.00 of the above payment will be refunded. No refund will be made for payments for extra prints of the Plans. Full refund of deposit will be made for payments for extra copies of the Specifications. Such refunds will be made only upon return of the documents within 10 days after the opening of proposals.

State Highway Department
By J. Gordon Smith,
W. W. Mack, Director, Chairman.
Delaware Crossing Division
August 23, 1950

Bids: September 18, 1950 (951)

Repairs to Pier Deck, Pier Fire Walls and Grain Elevator Supports

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
COLUMBIA STREET PIER
CONTRACT GT-1

Sealed proposals for the reconstruction of fire walls and repairs to the pier deck of the Columbia Street Pier and for repairs to the foundation supports of the Grain Elevator at the Port Authority Grain Terminal, Foot of Columbia Street at Gowanus Bay, Brooklyn, N. Y., will be received at the office of the Director of The Port of New York Authority, Room 1106, 111 8th Ave., New York 11, N. Y., until 2:00 P.M. Friday, September 15, 1950 and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $2 per set. The deposit will be remitted if the documents are returned in good condition, not later than 10 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, August 21, 1950

Bids: September 21, 1950 (951)

Pier

PORT OF BOSTON AUTHORITY
CONSTRUCTION OF EAST BOSTON PIER NO. 1
CONTRACT NO. 3
NOTICE TO BIDDERS
PORT OF BOSTON AUTHORITY
ALTERATIONS AND IMPROVEMENTS TO THE GRAIN HANDLING FACILITIES AT THE NEW EAST BOSTON PIER NO. 1 EAST BOSTON, MASSACHUSETTS

SEALED BIDS FOR CONTRACT NO. 3

Sealed Proposals will be received by the Port Authority at its office, Commonwealth Pier, Area "A", Boston, Massachusetts, until 2:00 P.M. Eastern Daylight Saving Time, on the twenty-first (21) day of September, 1950, at which time and place the bids will be opened publicly and will be read aloud.

The Contract Documents, including Specifications and Drawings, may be examined at the Port of Boston Authority office of the Chief Engineer, Commonwealth Pier No. 1, Boston, Massachusetts, on and after the twenty-eight day of August, 1950, every weekday except Saturdays and Holidays between the hours of 9:00 A.M. and 4:00 P.M. Each bidder desiring to bid on this work may withdraw Plans and Specifications upon payment of Fifty Dollars ($50.00) for each set. Deposits will be refunded to Bidders only upon the return of Plans and Specifications in good condition within ten (10) days after the opening of bids.

Each bid must be accompanied by a certified check in the amount of Twelve Thousand Dollars ($12,000.00). A performance bond in the full amount of the contract will be required of the successful bidder.

Attention of bidders is called to the requirements of Chapter 161, Acts of 1935 as to conditions of employment to be observed and minimum wage rates to be paid under the contract, to General Laws (Ter. Ed.) Chapter 149, as amended by Chapter 492, Acts of 1939, and Chapter 629, Acts of 1941, pertaining to subcontractors and fair employment practices among bidders on construction, reconstruction, alterations, remodeling or repair of certain public buildings (also to Chapter 7, Section 27 and 28A of the General Laws, as amended by Chapter 235, Acts of 1935, pertaining to preference in the purchase of supplies and materials, other considerations being equal, in favor of supplies and materials manufactured and sold within the Commonwealth, and creation of supplies and materials manufactured and sold elsewhere in the United States).

The right is reserved to waive any informality in or reject any or all bids. The contract is subject to the approval of the Governor and Council.

PORT OF BOSTON AUTHORITY
By James R. Nunn,
Chairman

Bids: September 18, 1950 (944)

Housing Project

PROJECT NO. PR 2-3
San Juan, Puerto Rico

The Municipal Housing Authority of the Capital de Puerto Rico will receive sealed bids until 2:00 P.M. on the 15th day of September, 1950 at their office in Caserio San Antonio, Avenida Fernandez Juncos, Puerta de Tierra, Puerto Rico at which time and place all bids will be publicly opened and read aloud for the construction of the following housing project, to be built on the site of "Caserio Luis Llorens Torres," Loiza Street, Insular Road No. 2, Santurce, Puerto Rico.

PROJECT P.R. 2-3

(3) dwelling units in forty-two (42) detached concrete apartment buildings, including utilities and site improvements, all in accordance with the Contract Documents.

The successful bidder will be required to furnish satisfactory performance and payment bonds.

Attention is called to the fact that not less than the wages as specified in the Contract Documents must be paid on the project, and that all wages must comply with the minimum wage laws in effect in Puerto Rico or with the changes which may occur during the life of the contract without increase in the contract price.

Proposal forms, Contract Documents including Plans and Specifications, are on file at the office of the Municipal Housing Authority of the Capital of Puerto Rico.

Copies of the Contract Documents may be obtained by depositing a certified check for one hundred and fifty dollars ($150.00) with the Municipal Housing Authority of the Capital of Puerto Rico for each set of the Contract Documents obtained. The deposit will be refunded to each prospective bidder who returns the Contract Documents in good condition within 15 days after the opening of the bids.

The Municipal Housing Authority of the Capital of Puerto Rico reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or bank draft payable to the Municipal Housing Authority of the Capital of Puerto Rico, P. R. Government Bonds or a satisfactory bid bond executed by the bidder and a surety company in an amount equal to five per cent of the bid shall be submitted with each bid.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the Municipal Housing Authority of the Capital of Puerto Rico.

MUNICIPAL HOUSING AUTHORITY OF THE CAPITAL OF PUERTO RICO
C. L. CLAUSELLS
Executive Director

(Continued on page 74)

OFFICIAL PROPOSALS
(Continued from page 73)

Bids: September 20, 1950 (959)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y. Pursuant to the provisions of the Highway & Building Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on September 26, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith state office Building, Albany, N. Y., for the following work:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 5				
		C. R. Wagner, District Engineer, 65 Court Street, Buffalo, N. Y.				
Erie	FAC NT50-1	City of Buffalo—Niagara Thruway Int. Court St.—A Portion Ave.—Connection Proj. 1965	1.66	Conc. Cpc. Pvt. 29.37 Wide 0.80 rad. Appr. Pave. 24 Type 2Y-6.5 Conc. Mac. Work shotcrete	$25,000 Plans $10.00	$471,000
Erie	GI-P50-1	Grand Island State Parkway, G. I. S. P. 49-1	4.81	Waterproofing Pvt. & Curb	$500 Plans $2.00	2,000
		DISTRICT No. 6				
		H. F. Bronge, District Engineer, 50 West Main Street, Hornell, N. Y.				
Steuben	FAS 50-9	Addison-Avoca Section, 0.11 Co. Rd. 5 Proj. 5032-1		Asph. Conc. Tr. 24 Opc. 3 Sp. Alpha 1 Bit. 241 Alpha—$24.50	$12,000 Plans $15.00	206,000
		DISTRICT No. 8				
		J. S. Bolo, District Engineer, Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster and Sullivan	SH 50-10F	Woodbourne-Hurleyville—Pt. 11.05 28—H.S.P. 4 P.C.S. B. 4 P.C.S. B. 2 A.P.C. A.P. IX		Conc. Conc. Pvt. 24 Wide 11.92 Conc. Type IX. Opc 0.03 rad.	$62,000 Plans $25.00	1,036,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Motorpark Hwy. at Imbert Ave., Babylon, L. I., N. Y.				
Nassau		East Atlantic Beach		Beach Erosion Control Proj. Asph. Conc. Type 13, Opc 0.15 Mac. Work 0.21 ac.	$7,500 Plans $10.00	253,500
Suffolk	RC 50-35	Amityville—Village Broad way 2.05 Amityville Village, SH 3300	0.58	Asph. Conc. Type 13, Opc 0.15 Mac. Work 0.21 ac.	$7,000 Plans $10.00	128,000

Proposal for each contract must be submitted in a Separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of State Department of Taxation & Finance for the sum as specified in the advertisement and in the proposal. The retention and deposit of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Building Law, as set forth in "Instructions to Bidders". When optional items are permitted on contracts with federal funds, bidders must state in the space provided in the proposal whether the acceptance of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

J. D. TALLAMY
Supt. of Public Works

Bids: September 16, 1950 (959)

Interceptor Sewer

Sealed bids are invited by the Town of Fairfax, Virginia addressed to Robert H. Walker, Mayor, to be opened and read in public at 11:00 A.M. Daylight Saving Time, September 18th, 1950, for the construction of:

16,283 Lin. Ft. of 18" Interceptor Sewer.
4,240 Lin. Ft. of 15" Interceptor Sewer.
2,850 Lin. Ft. of 10" Interceptor Sewer.
4,397 Lin. Ft. of 8" Interceptor & Lateral Sewers.
1,382 Lin. Ft. of 8" C. I. Class 150 Force Main.
Complete Sewage Treatment Plant, 10.59 Mgd.
Remodeling & Re-equipping existing Sewage Pumping station.
700 L. F. Concrete Block Manhole at an average of 30 Lin. Ft. Intervals.
Concrete Cradle required where depth of pipe exceeds maximum strength of pipe.
Concrete Encasement required where sewer crosses underground highways.

The Bidder will be required to furnish a Bid Bond in the sum amounting to 5% of total bid for each of the sections on which he bids.

On award of contract the Bidder will be required to furnish Performance Bond, Public Liability and Property Damage Insurance.

Bids for each contract submitted in their respective sizes will be received.

The Town reserves the right to reject any and all bids.

A TWENTY DOLLAR ($20.00) fee for each set will be required for each set of plans and specifications. Plans may be seen at the office of Walter Phillips, Virginia, N. Jefferson Lamb, Inc.

By authority of the Town Council at its regular meeting, on August 2nd, 1950.

OFFICIAL PROPOSALS

projects. Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposal for each contract must be submitted in a Separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of State Department of Taxation & Finance for the sum as specified in the advertisement and in the proposal. The retention and deposit of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Building Law, as set forth in "Instructions to Bidders". When optional items are permitted on contracts with federal funds, bidders must state in the space provided in the proposal whether the acceptance of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

J. D. TALLAMY
Supt. of Public Works

Bids: September 19, 1950 (949)

Housing Project

The Housing and Redevelopment Authority of the City of St. Paul, Minnesota, will receive bids for the construction, including general, plumbing, heating, electrical, grading, and site improvement work of the Edgcumbe Heights Addition, FHA Added Low Rent Public Housing Project, Minn. 2-4, No. 141, consisting of 512 dwelling units in a community building, with street grading and paving, sidewalks, certain utilities and landscaping, until 2:00 P.M., C.S.T. on the fifteenth day of September, 1950, at the office of the Authority, Third Floor, City Hall and Court House, St. Paul, Minnesota, at which time and place all bids will be publicly opened and read aloud.

Proposal forms, the contract documents, including general specifications, are on file at the office of the Housing and Redevelopment Authority

Room 2, City Hall and Court House
St. Paul, Minnesota
A. Conrad Architect and Engineers of St. Paul
416 Endicott Building
St. Paul, Minnesota

No bid may be withdrawn or modified, or bidder permitted to withdraw his bid, after the hour set for the opening thereof, or before the award of contract, unless the award is delayed for a period exceeding thirty days. Each bidder who retains the privilege of withdrawing after the bid opening hour, agrees that should he withdraw within the thirty days after the bid opening hour, he will pay to the Housing and Redevelopment Authority of the City of St. Paul, Minnesota, as liquidated damages for such withdrawal, the sum of $10,000 for each addition.

A certified check or bank draft payable to the Housing and Redevelopment Authority of the City of St. Paul, Minnesota, in the amount of 5% of the bid, or a satisfactory bid bond executed by the bidder and acceptable surety in an amount equal to 5% of the bid, shall be submitted with each bid. The successful bidder will be required to furnish and pay for bonds as follows: Performance bond in the amount of 100% of the contract price, labor and material payment bond in the amount of 100% of the contract price.

Attention is called to the fact that not less than the minimum salaries and wages as set forth in the specifications must be paid on this project.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

Aberthaw Co. 78, 82
Air Compressor Rental Co. 77
American Air Compressor Corp. 80
Arch Steel & Construction Corp. 78
Austin Co., The 75

Bendix Machinery Co., Inc. 78
Berkeley Distributors, Inc. 82
Bixby, R. W. 76
Boyce Co. 77
Boyer, R. H. 81
Brunson Instrument Co. 78
Butt 78
Butler Co., The Leo 78

Canadian Brazilian Services, Ltd. 75
Cappello, Mrs. S. 83
Construction Survey Corp. 77
Construction Machinery Co. 81
Crawford, W. J. 78
Crooks, B. S. 82
Cheney Gravel Co. 83
Contractors Sales Co., Inc. 77

Darien 83
Davidson Pipe Co., Inc. 83
Drachman Steel Corp., Hy. 82
Dyer Co., Inc., W. H. 83

Earle Equipment Co., The 80
Edelen & Boyer Co. 82
Equipment Corp. of America 81

Fehrs Tractor & Equipment Co. 82
Ferguson Co., The H. K. 75
Fort Equipment Co., The 83
Forsythe Equipment Co. 82
Foster Co., L. B. 83
Frank, M. K. 83

Garaga Co., Inc. 82
Girardi Const. Corp., Fred 83
Goodman, Al J. 80
Greenpoint Iron & Pipe Co., Inc. 83
Greensburg Machine Co. 81
Gurley W. & L. E. 78

Hentessey-Forrestal Machinery Co. 78
Hickerson, Roy D. 78
Hodge & Hammond Inc. 80, 81, 83
Hunter Tractor & Machinery Co. 80

Inland Construction Co., Inc. 82
Institute of Engineers of Puerto Rico 76

Johnson (Machinery) Ltd., C. H. 77

Kiely Construction Co. 82
Knox, K. M. 82

Lewis, Harry C. 80
Long Island Beam Co. 83

Mississippi Valley Equipment Co. 81, 83
Morrison Railway Supply Corp. 83

National Blue Print Co. 78

O'Neill, A. J. 80

Pandolfo Co., S. P. 77
Pioneer Construction Co. 78
Pyramid Pumice-Crete System, Inc. 82

Queensboro Steel Corp. 80

Rail & Industrial Equipment Co. 80
River Construction Corp. 82

Schoonmaker Co., Inc., A. G. 80
Shotland & Co., J. Jay 82
Smith, Inc., L. B. 79
South Orange, The Village of 78
Stone Equipment Co., The 80
Stone the Crane Man 77
Swabb Equipment Co., Inc., Frank 77

Tamblyn System 77
Tractor & Equipment Co. 81

Vulcan Iron Works 81

Walsh Co., Richard P. 81
Warren-Knight Co. 78
Weil & Co., J. H. 78
Weiss Co., B. M. 80
Wellworth Trading Co. 82
Wiertz Sales Co. 82
Williams Construction Co. 82
Wilson Engineering Corp. 77

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by August 25th at the New York Office 330 W. 42 St., N. Y. 18, will appear in Sept. 7th issue subject to space available

THE AUSTIN COMPANY

Invites Applications From Capable Engineers and Draftsmen

Opportunities are being offered to Engineers and Draftsmen who can design and or prepare engineering drawings for industrial buildings and their facilities. Assignments are not for specific projects but are in our regular engineering staffs in long-established offices located on the East Coast, Central West, Gulf Coast, and West Coast. Good working conditions. Established vacation and sick leave plans, also paid holidays.

Positions are open to men possessing a sound background of education and experience and qualifying in—

DESIGNERS—Office buildings, laboratories, and industrial buildings. Positions require those possessing vision and creativeness.

STRUCTURAL—Industrial buildings and miscellaneous structures of steel and reinforced concrete.

MECHANICAL—Heating, air conditioning, ventilation systems, process piping, conveying systems, plumbing, sewer, and sprinkler systems.

ELECTRICAL—Industrial lighting and power distribution, and controls.

DETAILERS—Draftsmen experienced in the preparation of steel details for shop fabrication of industrial building frameworks.

Full particulars as to education, experience, and compensation desired should be given in first letter.

NATIONAL HEADQUARTERS

16112 Euclid Avenue — Cleveland 12, Ohio

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

ADDITIONAL EMPLOYMENT ADVERTISING
on the following page

REPLIES: Box No.'s. Address to office nearest you
NEW YORK: 330 W. 42nd St. 18
CHICAGO: 520 N. Michigan Ave. 11
SAN FRANCISCO: 68 Post St. 4

POSITIONS VACANT

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and Chemical engineers preferred. Permanent openings in United States and Canada. P-785, Engineering News-Record.

CONSTRUCTION COMPANY operating nationwide, specializing in structural concrete, such as bridge piers and large foundations and mass concrete such as dams, requires A No. 1 thoroughly experienced mechanical fabricating shop, present day methods capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-774, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridge and structures. Must be capable of assuming responsibility, salary and bonus. Submit complete data on education and experience. P-1191, Engineering News-Record.

(Continued on the following page)

ESTIMATORS

Fully experienced in construction and capable of estimating building work, mechanical (machinery, equipment, piping, etc.) or electrical installations. Degree in civil, mechanical or electrical engineering preferred but not necessary.

Openings in Cleveland Office offers lengthy employment with good salary for those qualifying.

Send complete resume stating experience, education, salary requirements and available date to:

THE H. K. FERGUSON COMPANY
Engineers and Builders
Ferguson Building, 1783 East 11th Street
Cleveland 14, Ohio

WANTED
PROJECT MANAGER

A large, long-established construction organization has an opening in its executive staff for a top-level Project Manager. This firm specializes in the heavy construction of dams, tunnels, bridges, etc. where the thorough knowledge of large-scale concrete, dirt, and rock operations is essential, and the person selected will have full management responsibility for the execution of these types of projects. Past experience must have demonstrated the ability to handle such positions on a cost-conscious, competitive basis. Therefore interested persons should forward detailed personal and experience records in order that fair evaluations may be made of their qualifications.

Interviews will be arranged for qualified applicants. All inquiries will be held strictly confidential and all replies will be acknowledged. Our key employees know of this ad. Salary open.

P-7559 Engineering News-Record
68 Post Street, San Francisco, Calif.

POSITIONS VACANT
(Continued from the preceding page)

ENGINEER, CIVIL, experienced in drafting, quantity estimating, surveying and reporting on subdivision. Full charge team only. Write 5310 MacArthur Blvd., Washington, D. C.

WANTED CONSTRUCTION Superintendent for reinforced concrete hospital building in Eastern Pennsylvania. Give experience, salary, education age, references and salary desired. P-7488, Engineering News-Record.

CONSTRUCTION PROJECT Manager. Experienced in design and supervision of commercial construction and warehouse projects. Write giving detailed account of experience and past 10 years. P-7495, Engineering News-Record.

ELECTRICAL POWER Plant Designer. Draftsman wanted. Experienced in electrical design and drafting, also mechanical. Location South Atlantic States. P-7496, Engineering News-Record.

CHIEF MAN, steel draftsman, some field work necessary. Prefer graduate with 5 years experience in structural, sewage and water supply engineering. Location Pittsburgh, Pa. P-7497, Engineering News-Record.

WANTED: HIGH Class Draftsmen, structural and industrial, experienced in steel and concrete detailing. Must be experienced in steel and concrete detailing. Apply Stevenson & Valk, 101 Park Avenue, New York, N. Y.

STRUCTURAL DESIGNER. Immediate opening for structural designer with 5 years experience in design of steel and concrete buildings. Apply in writing, giving full particulars regarding experience, salary requirements, etc. P-7502, Engineering News-Record.

STRUCTURAL STEEL Detailer and Checker. Must be experienced. All replies strictly confidential. Apply Bridge & Structural Department, The Austin Company, Austin Structural and Associates, 1214 Cherry St., Toledo 2, Ohio.

ENGINEER, EXPERIENCED in public utility construction, installation, mechanical equipment, and estimating. Permanent position for long established Southern firm. Write giving full details of experience and salary expected. P-7507, Engineering News-Record.

SUPERINTENDENT BUILDING—Experienced Public Utility commercial and Industrial construction. State experience, age, salary and references. Location Ohio. P-7509, Engineering News-Record.

EMPLOYMENT SERVICE

BETTER JOBS—Bonuses. Travel. Engineers, Construction Workers. We can help you connect. U.S. Employment Service, Dept. 1, Bridge Building, Seattle. Write Services, Box 111, Richland, Wash.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection contact with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure of highest ethical standards, is individualized to your personal requirements and develops meetings without initiative on your part. Your identity secured and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

PROJECT ENGINEER

Wanted — Experienced Construction Engineer for large turbo-generator power plant on East Coast. Must have recent experience in directing operations for complete project, with knowledge of sub-aqueous operations and construction of docks and waterfront facilities. Write giving full particulars of education, experience and salary expected.

P-7108, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ELECTRICAL ENGINEERS

Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7541, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

CONSTRUCTION MANAGER—Project Manager, Graduate C.E., P.E., with 20 years experience in all phases of construction work, estimating, purchasing, field supervision. Broad experience on Heavy General Building and Industrial Plant Construction. Employed. Travel and references. Permanent connection desired. Available Jan. 1st. Salary $12,000. PW-7392, Engineering News-Record.

CIVIL ENGINEER 25 years engineering experience design, construction and supervision of roads, streets, bridges, sewers, etc. Desires change in employment. PW-7504, Engineering News-Record.

COUNTY HIGHWAY Engineer, 10 years experience in all phases of highway design, construction and maintenance. Desires consulting or similar duties now employed as county engineer and road boss. PW-7505, Engineering News-Record.

FIELD ENGINEER. Industrial construction. Seeking position supervising, detailing, computing. PW-7506, Engineering News-Record.

GRADUATE CIVIL Engineer with Law Degree and 14 years experience in all phases of engineering, sales and industry, with thorough knowledge of Administrative Law, desires position in Florida. Presently located in South Dakota. PW-7508, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT—College graduate, 14 years experience, thoroughly trained for field work, estimating, and layout. Has had many years of contact and negotiation with engineers, architects, and owners. Married, 40 years old, desires permanent connection with reputable firm. Location unimportant. PW-7509, Engineering News-Record.

CONTROLLER OFFICE Manager. Heavy construction, industrial. Accounting, Statistics, Taxes, Insurance, Estimates. Many subsidiary and joint ventures handled. 15 years experience. Married. Desires change. Will relocate. PW-7511, Engineering News-Record.

SPECIFICATION WRITER. Available for part time employment with prominent Architects and Engineers in Los Angeles. Commercial and Industrial plants, hospitals, etc. Will consider full time employment. East and no grade. Will travel. Experienced 3 years on West Coast. PW-7513, Engineering News-Record.

BOOKKEEPER—FEMALE—Construction background. Age 35 to 45. Full charge. Capable handling total bookkeeping. Permanent connection. N.Y.C. area preferred. PW-7516, Engineering News-Record.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT or Manager. Available for foreign or domestic work. Over 30 years experience all types construction projects, airports, hospitals, housing and power plants. Highly successful in handling labor relations problems. PW-7502, Engineering News-Record.

DRAFTSMAN, GRAD. Ind. Management, 2½ yrs. drafting exp. Mech. Struct. Reinf. Concrete in South. Wants responsible outdoor position. References. PW-7515, Engineering News-Record.

SALES ENGINEER—Graduate Civil Engineer, veteran, married, 7 years experience in consulting structural engineering and sales. PW-7518, Engineering News-Record.

(Continued on the opposite page)

WE OFFER
GRADUATE ENGINEERS
Civil Mechanical Electrical Chemical

Available for Duty in Latin America

U. S. Trained.
English and Spanish Speaking.

Adapted to Working and Living Conditions in Latin American Countries.

Please write to:

Institute of Engineers of Puerto Rico
Box 3392 San Juan, P. R.

CONSTRUCTION MANAGER AVAILABLE

Experienced general construction man seeks General Contractor requiring services of a Construction Manager for large projects or joint ventures. Foreign or domestic. Highest references.

PW-7510, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

MANUFACTURERS' REPRESENTATIVES

Well established firm with sales offices in New York, Philadelphia, Baltimore and Boston now successfully representing national manufacturers desires connection with large steel fabricators and piping fabricators. Must be capable of negotiating contracts up to one million dollars with erection as well as prefabricating facilities in various sections of U. S.

Solid contacts with large contractors, consulting engineers, boiler manufacturers, refineries and Government Contracting Agencies, etc.

For further information write:

BA-7508, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

Notice to Advertisers

Because of the Labor Day Holiday, September 7th, the Searchlight pages of the

September 7th Issue of ENGINEERING NEWS-RECORD

will be one week earlier than the usual publication date.

The copy and art of advertisers as selected in forwarding instructions will be used unless changed.

FINAL CLOSING TIME
Display and Undisplayed Ads
Friday, August 25th
PROPOSALS
Thursday, August 31st

(Continued from the opposite page)

PART TIME WORK WANTED

ENGINEER SKILLED Struct. Designer. Know const. methods, costs and contracting practices. Registered 4 states. Month or years' work. Box 863, Philadelphia 5, Pa.

SELLING OPPORTUNITY WANTED

YOUNG COMPANY in the Construction Machinery business looking for connection as Factory Representative in Midwest working out of Detroit, Michigan. RA-7581, Engineering News-Record.

CONTRACT WORK

Civil Engineering firm

located in Western Pennsylvania has competent Registered staff and floor space available to handle sub-contract design work in the heavy construction category. Inquiries invited. CW-7576, Engineering News-Record.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

INVITATION

to U. S. MANUFACTURERS OF LIGHT BUILDERS' & CONTRACTORS' PLANT.

Chairman of Directors of well-known firm of Portable Contractors' plant manufacturers visiting the U.S.A. September, wishes to contact firms manufacturing light Builders' and Contractors' Plant with a view to manufacturing their lines in Great Britain on a royalty basis. References available from U.S.A. firm with which we already operate on similar arrangement.

Full details in first instance, to Alfred Johnson, c/o Messrs. Johnson Wire Works Ltd. De Courcelles St., Henri, Montreal, Canada.

WANTED
SUB-CONTRACTS

For structural steel and reinforced concrete design or steel detailing, by Midwest Consulting Engineering Firm. Work to be done in our offices.

CW-7424, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

ESTIMATING SERVICE

Any Trade and Type of Project

Literature and Sample on request

Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

SUBMERGED PIPE LINE CONSTRUCTION

BOYCE COMPANY

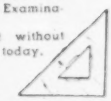
Phone 3-2530 Clearwater, Fla.

STRUCTURAL ENGINEERING

A Course of Instruction by Mail

FOR FORTY YEARS our courses have helped thousands to better positions and to pass State Board Examinations.

Information sent without obligation. Write today.



WILSON ENGINEERING CORP.
College House Offices - Dept. E
Harvard Sq. Cambridge, Mass.

WANTED

WANTED

Two diesel electric locomotive cranes to handle at least 1½ yd. clamshell buckets. American or Browning preferred.

Frank Swabb Equipment Co., Inc.
Hazleton Nat'l Bank Building
Hazleton, Pa. Telephone 4910

WE BUY OR SELL
All Types of
TRENCHING MACHINES
AIR COMPRESSOR RENTAL CO.
19615 NOTTINGHAM RD. CLEVELAND
Kenmore 1-8000

WANTED
¾ Yd Lima Model 34, Diesel Crane
1½ Yd Steam Crawler Crane
Material Bins and Cement Bins
Locomotives and Locomotive Cranes
Crawler and Gantry Cranes
STONE THE CRANE MAN
1132 Prudential Bldg., Buffalo, N. Y.

WANTED
Used Diesel Electric Locomotive Crane 1½ yd capacity with 60 ft boom.
CONTRACTORS SALES CO., Inc.
Box 968, Troy, N. Y. Erie Blvd. SYRACUSE
ARsenal 3-5320 Syracuse 6-1141

WANTED
80-D Diesel Shovel for Gravel Plant, recent manufacture, wide treads, prefer Eastern location.
W-2580, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED TO BUY
STEEL SHEETING
30,000 Sq. Ft. New or Used
40-50 ft. Long
Send details to
W-2570, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM
11-15 So. Pearl St. E-443
Denver, Colo.

ONE WOOLDRIDGE SCRAPER WAGON

12 to 15 Yd. Model BBU

Excellent Condition

One Yard Shovel Front Attachment for Manitowoc. Unused. Sacrifice.

Box 190, GPO, New York 1, New York

Buyers: Shovel Front Attachment
Cable Crowd For Model 85 ¾ Yard. Excellent Condition. Sacrifice
BOX 3, GROVE HALL
BOSTON 21, MASSACHUSETTS

1 Lorain half yard shovel; 1 Bucyrus Erie combination shovel and crane, with ¾ yard bucket; Caterpillar models 35 and R4 bulldozers, with tip trailers; mack tractor, with cummings Diesel engine; two compressors.
S. F. PANDOLFO
444 Asylum St. Hartford, Conn.
Tel. 6-9614 or 6-0811

THE VILLAGE OF SOUTH ORANGE

PUBLIC SALE

on September 18, 1950 at 2 o'clock P.M. D.S.T., at the Village Hall, South Orange, N. J., the purchasing agent of the Village of South Orange will offer for sale two (2) Ingersoll Rand Air Compressors, as follows:

Compressor No. 1
(74748-74749)

Compressor No. 2
(74746-74747)

Name of manufacturer ..... Ingersoll Rand Co.
Type "Imperial" type XRE 2 compressor having ..... cylinder, two stage air cylinder, direct connected to a 100 H.P. synchronous motor, 90% power factor, 30 degree "C" 440 volt 3 phase 60 cycle, with exciter, including starting panel, 277 revolutions per minute,
486 cu. ft. piston displacement,
400 cu. ft. are delivered per minute,
85 rated horsepower,
Size of cylinders 9 x 10 and 14 x 10,
100 lbs. per sq. in. discharge pressure.
Year purchased and installed new 1927
Condition: Compressor cylinders, intercooler, unloaders, main working parts, and exciter in operating condition.

The air compressors will be open to inspection at the main Pumping Station at Walton Avenue, South Orange, until the time of receiving bids. Failure on the part of the prospective purchaser to make inspection will not be considered as grounds for any claim or adjustment.

The compressors will be sold "as is" and "where is" without warranty or guaranty that the same are in any condition or fit to be used for the purpose for which they were intended, and no claims for allowance upon any of the grounds aforesaid will be considered after the bids have been received and accepted.

Bids will be accepted and considered for either one or both compressors.

Each bid must be submitted in writing, and accompanied by a certified check in the sum of not less than 2% of the total amount of the bid and made payable to The Village of South Orange, N. J. Delivery of the bar(s) must be made after a contract of sale has been awarded.

The compressors will be dismantled and placed outside the pumping station building under the gantry crane by the Village. The successful purchaser shall furnish all necessary labor, rigging, tools, etc. for removing the compressors from outside the pumping station and crane.

The board of trustees reserves the right to award a contract of sale for either one or both compressors and further reserves the right to reject any or all bids.

HOWARD S. WATKINS,
Purchasing Agent.

LATE MODELS

Excellent Condition

CAT D-7 w canopy top & hydraulic bulldozer
INT'L TD-18—built 1948, 970 hours. New 18A type 80 H motor & hydr. bulldozer
CAT D-6 w Linkbelt full revolvg. crane
CAT D-4 w new tracks & hydraulic angledozer
BUCYRUS-ERIE 38B Diesel 1½ cy shovel
INSLEY ½ cy six wheel Truck Crane
P. & H. 150 ton wheel Truck Crane
BAY CITY 20 tons ten wheel Truck Crane

BENDIX MACHINERY CO., INC.
401 Broadway New York 13
Tel. Canal 6-5693

FOR SALE

FOR IMMEDIATE SHIPMENT

Approximately 45 Tons of 2 7/16" dia. Cold Rolled Steel Shafting Approximately 12' Lengths. Very Attractive Price for Entire Lot. Write, Wire or Phone

ARCH STEEL & CONSTRUCTION CORP.
P. O. Box 546 Orlando, Florida
Phone 4814

Caterpillar Drawn Grader Model 66—$1000.00. 1946 Jaeger Model H. Tandem Screed Finisher 10 to 14 ft.—Like New $3500.00.

WM. J. CRAWFORD
2135 Fillmore Ave Buffalo, N. Y.

FOR SALE
AMERICAN STIFFLEG DERRICK WITH CLYDE STEAM HOIST Derrick ..35 tons—Model 2046 with ..... Boom ..40 Mast Hoist—Model 236 ..... drums with boom section attachment 17 Ton capacity at 98 feet radius—Boiler 50 H. P. Engine 40 H. P.

THE LEO BUTLER COMPANY
P. O. Box 97 College Park, Maryland
Tower 6600

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

FROM STOCK
Brand New & Rebuilt
TRANSITS & LEVELS
Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented
Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

TRANSITS - LEVELS

All Makes Repaired - Rebuilt - Parts - Sold - Rented - New or Used

CIRCULAR GRADUATING at New Higher Accuracies is Now Available — quickly, Economically — with our new circular graduating engine. *Ask for Prices.*

ALL WORK GUARANTEED
BRUNSON INSTRUMENT CO., INC.
1405 Walnut St., Kansas City 6, Mo.

LASTING BRUNSON ACCURACY

FOR SALE

51 Yd. Blaw Knox 2 Compartment Bin
73 Yd. Erie Cement Bin Complete
Buckeye Model 616 Road Widener
¾ Yd. General Model 307 Crane-Backhoe
1½ Yd. Omaha Drag Bucket
315 Ft. I.R. Single Stage Compressor

HENNESSEY-FORRESTAL MACHY. CO.
705 Chestnut St. St. Louis 1, Mo.

GURLEY

SURVEYING INSTRUMENTS

NEW • REBUILT

Repairs your platinum wire or spider web reticle with the new Gurley glass reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark back grounds.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Union Plaza Troy, N. Y.

TRANSITS AND LEVELS

New or Rebuilt Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 08

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

FOR SALE
New Model R334R Simplex Double Leverage Pipe Push & Pull Jacks with ¼" to 4" Jaws & Pilots.

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE
3—NORTHWEST Mod. 8 DRAGLINES
With 70 Ft. Boom
Excellent Working Condition
PIONEER CONSTRUCTION CO.
West End Nat'l Bank Bldg.
Second & Walnut Sts. Shamokin, Penna.

TRANSITS and LEVELS

Immediate deliveries on expertly rebuilt, well-known makes. All makes of instruments repaired. Work guaranteed

Write for used instrument list today

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

ALL MAKES
RE-BUILT REPAIR RENT SALE EXPERTS
BUFF

69 Dey St., New York

SPECIALIZED REBUILDING
of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.
USED REBUILT INSTRUMENTS
for sale or rent
ROY D. HICKERSON
46 JOHNSON AVE INDIANAPOLIS 19, IND

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 105 cubic foot with air receiver, hose reel, driven by power take-off and mounted on 1941 Ford.
Gardner-Denver air-cooled 105 cubic foot with air receiver, V-belt drive from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
LeRoi 2-stage 105 cubic foot air-cooled, skid mounted, built-in tool boxes, hose reels and hose.
Gardner-Denver two-stage 160 cubic foot skid mounted.
Worthington 210 cubic foot, two-stage, air-cooled on steel wheels with Hercules diesel.
Gardner-Denver 315 cubic foot two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250 cf, 60 CFM, new condition.

QUARRY EQUIPMENT & BINS

Cedarapids BBB 1036 Scalper.
10 x 20 Beaumont jaw crusher.
10 x 7 Allis Chalmers Blake type jaw crusher.
Cedarapids No. 1 Kubit.
60 ton 2 compartment storage bin with clam shell gates.
New 16 x 16 double clamshell gates.
20" x 6'6" Belt Type Magnetic Separator.
Conveyors—18"—24"—30"—36".
2—4' x 12' Tyler F600 screens.
Cedarapids portable screening plant.

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
Sterling COE Model 255GCS tandem drive tractor 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50x20 tires, airbrakes, outriggers, excellent condition.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels.
GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain 75B, 1¼ yd. shovel, gas power
Marion 25-ton diesel powered heavy duty truck crane on heavily reinforced Mack.
P&H Model 625A 15-ton crawler crane.
Brownhoist 1-yd. gas shovel and crane.
Lorain 30 combination ½ yd. shovel, hoe & clam.

SHOVEL & CRANE ATTACHMENTS

Lorain 75B-77 1½ yd shovel attachment rebuilt.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
Koehring 301 dragline fairlead.
50' crane-clam boom, 1¼ or 1½-yd.
Lorain 75 fairlead.

Backhoe Buckets & Attachments

¾ yd Lorain, 40, LBS #6105. 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.
¾ yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2 yd crane.
McCaffrey Model 636 for ¾ yd to 1 yd crane.

SHOVEL DIPPERS

Lorain 41, ¾ yd. LBS #7433, rebuilt.
New Lima 1-yd. Amsco. LBS #2295.
Bucyrus-Erie 1¼ yd gas air, LBS #3782, fair.
Lorain 75 manganese 1¼ yd, LBS #7233, teeth and bail.
Lorain 75B, 1¼ yd extended lip, 1¼ yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

27E Koehring Paver.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
4050'—Heltzel 9"x8" forms with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

Barber-Greene 44C Trenching Machine

ROLLERS

Hercules 9-11 ton, three-wheel.
Buffalo-Springfield 10-ton, three-wheel.

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.

TRACTORS

FD Cletrac crawler tractor, Buckeye bulldozer & double drum power control unit, DHXB Hercules diesel engine. Rebuilt, immediate delivery.

International TD-9 with Bucyrus-Erie angledozer.

Minn-Moline UTI wheel type, gas powered with Lull front end shovel loader.

Phone **HARRISBURG, PA. 7-3431**

LASTING • BONAFIDE • SERVICE — L.B. SMITH, Inc.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

DIESEL POWER

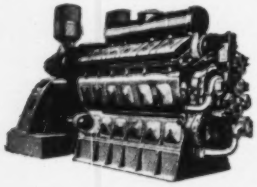
FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	38F16	2000	300	375	Enterprise	DSG-6	450	450
1429	Fairbanks Morse	38D8⅛	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	3-268A	450	1200
937.5	General Motors	12-567	1000	720	312	Clark	M10-4	375	327
625	Alco	6-12½x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.

DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

FOR SALE

Bearing Piles and H-Beams

8" x 36#	40'
10" x 42#	40'
10" x 49#	40'
12" x 53#	40'
12" x 65#	40'

Plates — from 3/16" to 1"

WRITE WIRE CALL

QUEENSBORO STEEL CORPORATION

47-29 Van Dam Street
Long Island City 1, N. Y.
Stillwell 4-2720

FOR SALE

41-B Bucyrus Erie Steam Crane
N-West Model 25 crane drag hoe
N-West Model M crane drag
Single drum gas hoist reversible
Double drum gas hoist
100' conveyor 36" belt
Backhoe for Bay City Model 45
Truck Cranes 5 ton to 25 ton

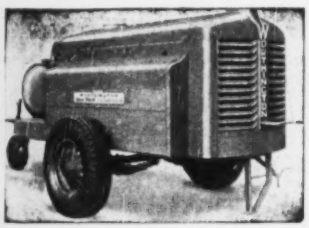
The STONE EQUIPMENT Co.
10038 W. Jefferson Ave., River Rouge, Michigan

PORTABLE COMPRESSORS

Sales—Rental
Rental Purchase

30 CFM WORTHINGTON (Gas) 2 Pneu
60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
85 CFM INGERSOLL (Gas) 2 Pneu
105 CFM WORTHINGTON (Gas & Diesel)
105 CFM INGERSOLL (Gas) 2 & 4 Pneu
160 CFM INGERSOLL 4 Pneu
210 CFM GARDNER DENVER (Gas) 4 Pneu
210 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
315 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
500 CFM WORTHINGTON (Diesel) 4 Pneu

STATIONARY COMPRESSORS
FOR RENT
ELECTRIC - STEAM - GAS



American Air Compressor Corp.

Dell Ave. & 48th St., North Bergen, N. J.

SINCE 1902

DRAGLINE: Monighan 165' boom, 12 yd. bucket, diesel power, condition like new.
SHOVELS: Bucyrus Erie 120-B electric, 4 yd. capacity; Marion 4161, electric, 5 yd. capacity; P & H model 955, 2½ yd. diesel.
LIMA 802 Shovel Attachments only, condition like NEW.
ROAD ROLLER: Buffalo-Springfield 10 ton, 3 wheel, powered by International UD9 diesel engine, with scarifier attachments. Used four weeks.
GRADER: Caterpillar model 12 with scarifier and cab.
WAGON DRILLS: Two type D Ingersoll Rand equipped with X-71 WD Drifters for 1¼" steel.
TRUCKS: Euclid model T, end dump, rock bodies, 22 ton cap., 275 H.P. Cummins motors.
DERRICKS: 1—75 ton Stiff Leg, 100 ft. boom. 1—35 ton Guy, 88 ft. boom, 98 ft. mast.
DRYER or KILN: Allis Chalmers 10 ft. x 90 ft., heavy duty. Located Minnesota.
JAW CRUSHERS: Allis Chalmers size 48 x 36" with new non-choking manganese steel jaw and cheek plates. Farrel 15-B, size 24 x 36", manganese fitted, with or without motor and drive. Pioneer 24 x 36" portable, with or without diesel power. Also, all sizes 4 x 6 to 48 x 60.
GYRATORY CRUSHERS: All sizes.
REDUCTION CRUSHERS: Symons 2 ft., 3 ft. and 5½ ft. Good Roads 1040. Allis Chalmers R322.
MINE HOISTS: Single and double drum, 100 H.P. to 1050 H.P.

A. J. O'NEILL

Lansdowne, Pa.

Phila. Phones: Madison 3-8300—3-8301

USED TRACTOR BARGAINS

Caterpillar RD4, Serial #4G5106, with LeTourneau Bulldozer #B3527E90 $2,000.00

Caterpillar D4, Serial #2T8242W, with Traxcavator Front End Loader #T4-2130 $3,000.00

Caterpillar D4, Serial #2T9539W, with Athey Overhead Loader and Bulldozer Blade Attachment $4,750.00

Caterpillar RD6, Serial #1706, with LaPlante Choate Hyd. Angledozer & Hyster Rear Towing Winch $2,500.00

EARLE EQUIPMENT CO.

6331 Tireman Ave. Detroit 4, Michigan

PHONE: Texas 4-2100

FOR SALE—IMMEDIATE DELIVERY

In Excellent Condition

1—Bucyrus Erie 14-B Shovel Dragline
1—Bucyrus Erie 43-B Dragline w/54-ft Crawlers
1—Lima 502 Dragline w/swamp cats
1—Insley K-12 Combination Dragline-Crane
1—Lorain 40 Shovel-Backhoe
2—Cat. D-8 Tractors, 8R series w/LeTourneau DOPCT and 16R dozers
2—Cat. D-8 Tractors 8R series w/Cat. Model 25 pcu and 8A angledozers
1—Int. TD-18 Tractor with angledozer
2—Int. TD-14 Tractors with angledozers

Wire, Call or Write

Day Phone ENKA, N. C. 120 or 622 — **AL J. GOODMAN** Box 261 Asheville, N. C. — Nite Phone Asheville, N. C. 5668

PUMPS AT SACRIFICE

Factory new Barnes Centrifugal Pumps
Sizes 3" to 6"
Immediate Delivery

HODGE & HAMMOND INC

1162 Grinnell Place New York 59, N. Y.

FOR SALE

ONE—INSLEY CRANE & B. H.

ONE—C. C. 6 x 8" PIPE CUTTING MACHINE 325# HEMP

RAIL & INDUSTRIAL EQUIPMENT CO.
30 CHURCH STREET NEW YORK

SALE OR RENT

1—D4 Traxcavator.
1—6 Ton Huber 3W Diesel Roller.
1—Lima 34 Truck Crane 80' Boom.
1—Koehring 304 Diesel S.C. & Bhoe.
1—American 6-85 Revolver 90° B.3 60 440V.
1—45' Crane Boom for Link Belt LS90.
1—5 Ton Wright 3 motor AC Floor Operated, Underhung Travelling Crane, 21'4" Span.
1—30 Ton Plymouth Std. Ga. Diesel Loco.
1—40 Ton Orton Diesel Loco. Crane.
1—30 Ton Browning Steam Loco. Crane.

B. M. WEISS CO.

Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

CRANE BARGAINS

1—Model 18 Northwest ½ yd. crane and dragline with the same guarantee as a new machine.

1—½ yd. Unit Truck Crane, almost like new at approximately half the price of a new one.

The above machines will stand the most rigid inspection and photographs furnished on request.

Hunter Tractor & Machinery Company

327 South Sixteenth Street
Milwaukee 3, Wisconsin
ORchard 2-6580

FOR SALE *CHEAP*

2—New D-13000 Caterpillar Diesel Engines 150 H.P. Complete with Clutches and Pulley-drives.

1—Schramm Diesel 315 cu. ft. 2 stage comp. 1947.

1—LeRoi Diesel 315 cu. ft. 2 stage comp. 1946.

1—25-ton Duvenport diesel Loco. std. gauge new 1947.

1—50 ton Porter Loco. 0-6-0 Std. gauge.

HARRY C. LEWIS

899 East Grand Street Elizabeth, N. J.

ROAD & CURB FORMS

Blaw-Knox 8000 ft. 9"x9".
Blaw-Knox 10000 ft. 8"x8". NEW.
3000' Metaform Curb Forms 13½" hi, 18".

ROAD ROLLERS

B-S 10 ton 3 wheel VM-3I.
B-S tandem 3 axle 10-14 tons.
Hercules 3 wheel 10 tons.

GRADERS—CONCRETE MIXERS

4 Yd. 56-S Smith Tilting Mixers, left hand.
2 Yd 56-S Smith Mod T. Tilting Mixer.
2 Yd C.M.C. 56-S Building Mixer. 2 Yd.
2 Yd. Ransome 56-S Builders Mixer, Elec.
28-S Ransome Builders Mixer, Elec.
Cat. Model 112 Motor Grader.
Austin-Western Model 99-M Auto Patrol Diesel.
Koehring Model 34-E Twin Batch Paver.
Ransome 34-E Dual Drum Paver, Diesel Power.

CONCRETE PLANTS AND STORAGE BINS

Johnson 3 Compt. agg. 2 cement, 2 yd. batcher, 800 bbls. cement silo semi-auto controls, etc.
Butler cement bin 105 bbls. Complete.
Aggregate bin 105 tons 3 compts. No batcher.
Butler 300 Ton, 3 compt. bins, 1 for 100 bbls. cement.
168 tons aggregate bin 3 compt. with 4 yd. weigh-batcher and scales, excellent.

ASPHALT PLANTS

Masden 3000 cap. Complete.
Barber-Greene 830-840 Hot Mix.
Barber-Greene Model 848 "Travel Plant".
Barber-Greene 842 Portable Utility Plant. Complete.

EUCLID TRUCKS ATHEY WAGONS

3 Euclid Model 3½ FD rear dump.
6 Euclid Model 27 FD Rear Dump.
4 Cat. DW10 Tractors Athey PD10 trailers.
3 Athey FB; two EB 2 way dump wagons.

PUMPCRETES

REX 160-180-190-200 with fittings.

SHOVELS—CRANES—DRAGLINES

Marion Mod 111 M Diesel Hi Lift Shovel.
Marion Mod 362 1½ Yd. Shovel, Crane, Dragline.
Koehring 803 Diesel Crane 2 yd. 100' bm.
Koehring 304 Diesel ¾ Yd Shovel, Crane, Backhoe.
Lorain 80 1¼ yd Diesel Shovel-Crane 1948.
P&H 655-B Diesel Shovel, New 1947.
P&H 855B Diesel Shovel 2 yds.
P&H 255A Diesel Shovel-Crane 1948.
Lorain 40 Comb. Complete. ¾ yd.
Lima 1201 High Lift Diesel Shovel.
Lima 1201 Dragline with 100 ft. boom.
Link Belt 20 Truck Crane 15 Ton Cap. on Mack.
Lorain MC 418 Truck Crane 25 Ton. 100' Boom.
Northwest 25 Truck Crane on Mack. 40' Boom.
Northwest 25 2 yd. Diesel Shovel Crane Backhoe.

CONCRETE BOTTOM DUMP BUCKETS

2 Blaw-Knox 4 yd air controlled.
6 Blaw-Knox 1 yd Roller gate.
2 Grabo 1 yd controllable clamshell gate.

TRENCHERS

Barber-Greene Model 44C.
Parsons Model 200 wheel type approx. 2 yrs. old.
Buckeye Model 11, reel type.
Cleveland Trencher Model 95.

STIFF LEG AND GUY DERRICKS

Steel 35 ton stiff leg derrick 100 ft. bm.
American 20 ton stiff leg 90 ft. bm.
American 15 ton stiff leg 65' boom.
Stiff leg derrick 15 tons 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.
Lambert Guy derrick 20 ton, 110 ft. boom.
Railroad 50 ton derrick car. Bridge construction.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

When you see equipment listed in an E.C.A. advertisement you know that *we own it outright* and you can see it at an E.C.A. show room.

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—2¼ yd. Mill K-206 Link Belt Diesel crawler crane #2221, with 50 ft. boom and 1½ yd. clam bucket; crawler hydraulic portable 125-200 engine. Will handle 4½ ton. Weight 44,000 lb.

1—1¼ yd. Link Belt Model K-206, Ser. No. 2247, equipped with 70' boom, powered by Cat D7 diesel engine.

1—1¼ yd. Lorain Model 50, No. 10276, with 65' boom, powered by Waukesha Hexadiesel diesel engine.

1—¾ yd. P&H Model 655-A, combination shovel-crane and crane, Ser. No. 5426, powered by Caterpillar Model D13000 Diesel engine, crane boom 75', shovel front 24' boom, 18' sticks, ¾ yd. manganese dipper.

1—¾ yd. Link Belt Model K-500, Ser. No. 1909, powered by Caterpillar D13000 Diesel engine with 65' boom. Also have back hoe attachment, boom 25', dipper arm 8'-0", pull shovel mast 31' with 1¾ yd. dipper.

1—1¼ yd. Bucyrus Erie, Mill 22B, Ser. #16602, equipped with 80' boom.

1—1¼ yd. 7' Northwest Ser. No. 4764, Powered with 6 cyl. Waukesha Model D8A gasoline engine. With 60' boom.

1—1¼ yd. Link Belt, Model K-35 crawler crane, Ser. No. 1220. Powered with 4 cyl. Model WF, 51/8 Waukesha gasoline engine with 50' boom.

1—¾ yd. Lima Gas A-1, Model GA 2 combination shovel and crane, Ser. No. [illegible] powered with 6 cyl. Waukesha Model WL55 gasoline engine with 47' crane boom. Shovel boom 22', sticks 32' with ¾ yd. dipper.

1—¾ yd. Keystone Model 301, Ser. No. 81. Powered truck cyl. Wisconsin Model M gasoline engine with 40' boom.

1—¾ yd. Bucyrus Erie Mill 10B, Ser. #14104, can be powered with 25' boom. ¾ yd. dragline bucket.

WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

TRENCHERS

Buckeye Model 12, Serial # 12-12, powered by 6 cyl. Buda gas engine, Model HF-226, wheel type. Will cut 24" wide, 5½' deep, all mounted on crawlers.

Parsons Model 200 trencher, Serial # 3774, powered by 6 cyl. Waukesha gas engine, Serial # 6BZ1[illegible]6SR, wheel type. Will cut 21" wide, 5½' deep, all mounted on crawlers.

BOTH LATE MODEL MACHINES REBUILT

AIR COMPRESSORS

Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

CAR PULLERS

2—Stephen Adamson car pullers, size 99SA & 14H. Both 10 H.P. 1—10,000 L.P. 1—5,000 L.P.

TRUCK CRANE

½ yd. Universal crane 28-B, with 25' boom mtd. on 10 wheel Hendrickson power, tired truck.

LOCOMOTIVE

1—15-ton Vulcan std. ga. locomotive, Ser. No. 5065. With special MCB couplings. Powered by 6 cyl. LeRoi Mill. 1MS gasoline engine. Equipped with 4 wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.

PUMPCRETE

1—Rex Mill. 190 single 2CP144, gas-powered with reversing hopper. Cap. 25 to 30 cu. yds. per hr. Max. lift 110'.

Partial List only—Send for Stock List—We Buy, Sell and Rent

CLIFTON HEIGHTS, PA.
MAdison 6-2200

30-J Church St.
NEW YORK 7, N. Y.
Phone Worth 2-0036

1155 So. Washtenaw Ave.
CHICAGO 12, ILL.
Phone NEvada 8-2400

P.O. Box 933-J
PITTSBURGH 30, PA.
Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

FOR SALE

25 ton American Gas Locomotive Crane
40 ton Orton Diesel Locomotive Crane
30 ton Davenport Diesel Locomotive
50 ton Whitcomb Diesel-Elec. Loco.
2½ yd. Bucyrus 548 shovel-dragline
2 yd. Lorain diesel crane-dragline 100 ft. boom. Built 1948
20 yd. Koppel air dump cars. Std. ga.
1300 ft. I-R 2 stage elec. air compressors
150 HP Kewanee portable boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis 1, Mo.

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.
2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

FOR SALE

LOCOMOTIVES

Porter 12 Ton, 36" Ga. Diesel.
Plymouth 15 Ton, 36" Ga. Diesel.
Plymouth 30 Ton, Std. Ga. Diesel.
1—Brookville — 8 ton Gas — Std. Ga — New 1943.
Brookville—10 Ton Diesel—39" GA—Used 900 Hrs.

Electromotive 100 Ton Diesel Elec., ICC, Late Model.

COMPRESSORS

CHI—PNEU. PM-4 Two Stage—445 C.F.M. 25 H.P. 3-60-220-440. New 1942. #43107.

DERRICKS

1—American 70 ton Stiff Leg—135' boom—complete with American 250 H.P. 3 Drum Gas Hoist with Swinger. NEW.

MISCELLANEOUS

HYSTAWAY ATTACHMENT FOR CAT D-8. ALMOST NEW

Dewalt GE 2½ HP saw #51098. Almost New.
C-P Impact wrench, Model 37SRS.
48—Western 20 yd.—Air Dump.
Union #6 Sheeting Hammer—#2128.
2—Orton 40 ton Diesel Loco. Cranes. New 1943.
40-70 Ton Hopper Cars.

R. H. BOYER
2005-13 W. Bellevue St., Phila. 40, Pa.
Phone Sagamore 2-7132

NEW and REBUILT
STORAGE BATTERY
LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

Scoopmobiles & Buggymobiles

NEW & USED
For Sale or Rent

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

DEPENDABLE USED MACHINES

Special.—Two rebuilt Hughes-Keenan Roustabout cranes left, $600 each.

Bay City ½ yd. dragline
Byers 61 dragline
Universal truck hoe
RD-7 with bulldozer
Butler Carscoop
Silent Hoist Krane Krawler
Hoe attachment for Bay City 65
CH&E self priming cent. pump
Morris 10" manganese gravel pump
Pioneer duplex pact. gravel plant
Rubins 3'x6' screen
Iowa 9x36 jaw crusher
Badger 36x29 roll crusher
Case Model L engine
Robins belt feeder

For rent,—cranes, draglines, backhoes and all accessories.

1002 S. Ridgeland Ave. **TRACTOR & EQUIPMENT CO.** Oak Lawn, Ill.

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287# 398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

FOR SALE

All equipment from large Lock Job including

Batch Plant with three 3-yd. mixers and five compartment bin. Meets U. S. Engineers Specifications, also

Cranes, Whirleys, Compressors, Wagon Drills, Pumps, Concrete Buckets, Excavating Buckets, etc.

RIVER CONSTRUCTION CORPORATION

Foot of 20th Street Granite City, Illinois

Post Office Box 21 Telephone: Illinois 3130

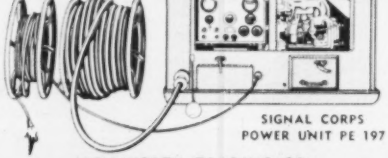
LIGHT PLANTS

Brand New!

WAR SURPLUS

115 volt 60 cycle A.C. single phase 5 K.W. Hobart water cooled, 14 h.p. 4 cylinder Hercules Engine. Remote Control, complete panel board with instruments. 150 ft. automatic remote control cable with reel; 150 feet #6 heavy duty wire with reel; housed in metal case with replacement parts and tools. Cable with reels alone worth $400. Regular price of unit $1600. Shipping wt. 1250 lbs. Our price, complete ..... $475.00 f.o.b. Chicago

Also 2½ K. W. power plant $295.00



SIGNAL CORPS POWER UNIT PE 197

WRITE FOR ILLUSTRATED FOLDER

WELLWORTH TRADING CO.

831 S. State St. DEPT. ENR-6 Chicago 16, Ill.

U. S. ARMY PORTABLE

LIGHT & POWER GENERATORS

"AMERICAN" 15,000 Watt, 28½ Volt D.C. on Pneumatic Tired Trailer Continental Eng.

Excellent Condition REG. $1,800 **$425** F.O.B. Phila.

"Onan" 2,000 Watt Battery Charging Generator, 12 Volts, 2 Cyl. Engine. Regular $475. Special $125. F.O.B. Phila.

"Onan" 4,000 Watt, 115 Volt, Single Phase, 500 Cycles, Plus 7½ H.P. Motor, 115 230 Volt. Regular $1,200. Spec. $295. F.O.B. Phila.

"Waukesha" 5,000 W., 28½ Volt, D. C., 125 Amps. With 4 Cyl. Waukesha Rad. Cooled Eng. Reg. $1,550. Spec. $275. F.O.B. Phila.

J. Jacob Shannon & Co.

214 N. 22nd St. Philadelphia 3, Pa.
The Oldest Equip. House in Phila.

FOR SALE

2912 Square feet of PLASTIC FACED PLYWOOD UNIFORMS, STEEL FRAMING, 6 corners and NECESSARY HARDWARE. $3,000 f.o.b. Albuquerque, N. M. Used twice.

ONE No. 4 KENT FLOMASTER continuous mixer complete with air-cooled gasoline engine. Used one week. $1200. f.o.b. Albuquerque, N. M.

PYRAMID PUMICE-CRETE SYSTEM, INC.

121 S. Yale Ave. Albuquerque, N. M.

FOR SALE

PORTABLE CONCRETE PLANT

1—Erie Strayer 1 cubic yard Portable Concrete Plant.

P. O. Box 32, Uwchland, Penna.

ESCO 1¾ YD. SHOVEL BUCKET

All manganese steel, with Dogleg Bail, Padlock Block and Teeth

Almost new, used only a few months.

R. M. KNOX—B. S. CROOKS

424 Endicott Bldg. St. Paul, Minn.
Tel. Cedar 6841

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 60 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.

37-11 Vernon Blvd. Long Island City, New York
Tel. STillwell 4-1030

FOR RENT

1201 Lima dragline with 60 foot boom—5 cu.yd. bucket up to 100 foot boom—3¼ cu. yd. bucket

2 D-8 Caterpillar Bulldozers

1 D-7 Caterpillar Bulldozer

INLAND CONSTRUCTION CO., INC.

P. O. Box 507 Rosedale, Miss.

New Guaranteed . . . 60 TON

HYDRAULIC JACKS

Navy Surplus ILLUSTRATED CATALOG **60% off**

BERKELEY DISTRIBUTORS INC.

16 JOHNSON AVE HACKENSACK N. J.

FOR SALE

Reliance Crushing Plant

15" x 30" Crusher—38' Bucket Elevator
58" x 12' Roller Screen—100 Ton Capacity Bin
2 Gaso. Engine Power Units

ABERTHAW COMPANY

133 Southampton St. Boston 18, Mass.

FOR SALE

1—N. W. SHOVEL

¾ c.y. Model 25
Optional as Crane or Backhoe

WILLIAMS CONSTRUCTION CO.

Box 145 Middle River, Baltimore 20, Md.
Phone—Essex 1310

FOR SALE

Two (2) Model 80-D Northwest Crane-Shovel-Draglines.
Four (4) Allis-Chalmers HD-19 Tractors.
Four (4) 27FD Euclid End Dump Units.
Ten (10) 31FDT Euclid Bottom Dump Units.
One (1) Rex Dual Drum 31-E Paver.
One (1) Letourneau Model "W" Scraper.

FEHRS TRACTOR & EQUIPMENT CO.

1809-11 Cuming St. Omaha 2, Neb.

FOR SALE

Late model, used

Adnun Blacktop Paver

finishes up to 12 feet.

Top Condition. Priced to sell.

KIELY CONSTRUCTION CO.

P. O. Box 65 Butte, Montana

FOR SALE

1—Northwest Model 41 Shovel Attachment 1 C.Y. Yard Complete

GARGARO COMPANY, Contractors

40 E. Seven Mile Rd., Detroit 3, Michigan

FOR SALE OR RENT

USED Buckeye RB 12 foot Finegrader

EDELEN & BOYER CO.

1717 North 54th St., Phila., 31, Pa.
Greenwood 7-2000

---

100 Slip Form Jacks

FOR RENT or SALE

New Condition

WIERTZ SALES CO.

66 So. Terry St. Dayton 3, Ohio

RAILS-TIES
TRACK ACCESSORIES

FOR SALE
2—Smith 56-S Tilting Mixers with electric drives and hydraulic controls.
THE FINN EQUIPMENT COMPANY
2525 Duck Creek Road, Cincinnati 8, Ohio

SHOVELS & CRANES
1—Northwest Model 6 Crane
2—Northwest Model 25—crawler crane, shovel, Pullshovel
1—Koehring 1¼ yd. Crane
1—Lorain 2 yd. diesel shovel
HODGE & HAMMOND, INC.
1100 E. 156 St., New York 59, N. Y.

Need RAILS?
You'll get them "Faster From Foster"
Largest stocks in U.S.
NEW & RELAYING RAILS
Track Tools and Accessories
Foster guarantees material satisfactory or returnable freight both ways, our expense.
✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS
L. B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

FOR SALE
BUCKEYE TRENCHER
C-20—Special Boom—digs 27" deep by 52" wide, 6 cyl. twin city gas motor. Fair condition—price $6000.00.
MRS. A. CAPPELLO 11745 LONGVIEW
DETROIT 5, MICH. LAKEVIEW 6-9837

PILING

FOR SALE
2 Tournapulls—Model R18 with E-25 Carryall scrapers, 22° horse power Buda diesel motors, 24 x 29 tires. These machines are factory rebuilt and the carryalls have never carried a load or dirt "absolutely new." Immediate delivery. Write or wire for prices.
CHENEY GRAVEL CO.
Route 1 Phone—4-6131 Holt, Michigan

FOR RENT OR SALE
Northwest ⅜ 6 Shovel (Diesel)
Northwest 25 Backhoe (Gas)
TD 14 Bulldozer — TD 18 Bulldozer
Low Bed trailer & truck
105 Ingersoll Rand Air Compressor
1942 White Dump truck & Mall chain saw.
FRED GIRARDI CONS'T CORP.
Supt. Saf. Tools
15 Fountain Pl. New Rochelle, N. Y.
New Rochelle 6-7328 or 6-1990

We do a Nation-Wide business in
STEEL SHEET PILING
New & Used Rented & Sold
55 pcs. 60 ft. Inland 122-Louisiana
206 pcs. 60&50 ft. Carn. MP115-Illinois
204 pcs. 60&40 ft. Inland 127-Chicago
54 pcs. 30-27 ft. Beth. DP2-Buffalo
575 pcs. 27-35 ft. Carn. M112-Minnesota
96 pcs. 21-19 ft. Beth. DP2-Tennessee
Other lengths & sections at various locations
All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write
MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

NEW—RAILS—Relayers
All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.
M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

PIPE

IMMEDIATE DELIVERY
Driving Pile Sections
WF BEAMS H BEAMS CHANNELS
ANGLES BARS
Plate from 3 16" to 6"
Long Island Beam Company
39-23 21st Street Long Island City, N. Y.
Stillwell 6-5900

New **RAILS** Relay
Track Accessories — New Steel Storage Tanks
W. H. DYER CO., INC.
1859-X Railway Exchange Bldg., St. Louis, Mo.
Stocks at Various Points — Quick Service

EST. 1904
DAVIDSON
PIPE COMPANY INC.
FORMERLY
ALBERT & DAVIDSON PIPE CORP.
ONE OF THE LARGEST STOCKS IN THE EAST
Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured
Specialty large sizes
Cutting — Threading — Flanging — Fittings — Valves
Call GEdney 9-6300
50th St. & 2nd Ave., Brklyn 32, N. Y.

STEEL SHEET PILING
1600 Pcs. Beth. SP4 — 8 to 24 Ft. Virginia
50 Pcs. Beth. DP2 — 13 Ft. Penna.
100 Pcs. Beth. AP1 — 60 Ft. Penna.
1100 Pcs. Carnegie M112 — 15-35 Ft. South.
200 Pcs. Beth. DP2 — 60 Ft. Penna.
9 McK. T. Hammers 6, 7, 5S, 9B3, 10B, 11B3.
Vulcan 50HD, 1 & 2 — No. 806 Extractor.
1—Bucyrus 41B & 42B Steam Cranes.
DARIEN, 60 E. 42nd St., N. Y. 17, N. Y.

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER
75# ASCE—85# ASCE—100# ARAA
NEW & RELAY TURNOUTS
in stock for Prompt Shipments with and without Switch Stands
MORRISON RAILWAY SUPPLY CORP.
RAND BLDG. BUFFALO 2, N.Y. EMPIRE BLDG. BIRMINGHAM 3, ALA.

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO., INC.
Bogart and Stagg Streets Brooklyn, N.Y.

INTERLOCKING STEEL SHEET **PILING**
All lengths & strengths RENT or BUY
L. B. FOSTER CO.
Pittsburgh(30) New York(7) Chicago(4) Houston(2)

PROFESSIONAL SERVICES

Consoer, Townsend & Associates
Water Supply — Sewerage — Flood Control & Drainage — Bridges — Express Highways — Paving — Power Plants, Appraisals — Reports — Traffic Studies — Airports
351 East Ohio St., Chicago 11, Illinois

Gustave M. Goldsmith
Consulting Engineer
Structural and Building Design
Quantity Surveys
Production Planning
1704 Delta Vista, Cincinnati 37, Ohio

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory
121 So. Broad St., Philadelphia 7, Pa.

Inspecting and Testing

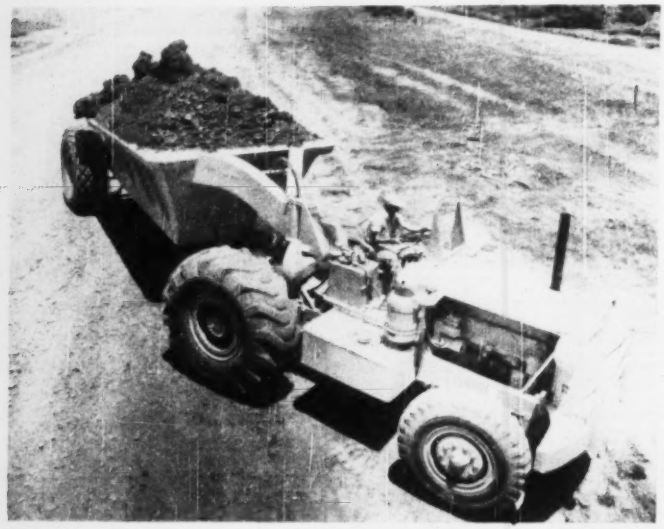
Metcalf & Eddy
ENGINEERS
Investigations, Reports, Design, Supervision of Construction and Operation, Management, Valuation, Laboratory
Statler Building 131 Sutter St.
Boston 16 San Francisco 4

Jones, Henry & Schoonmaker
(Formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment, Waste Disposal
Security Building Toledo 4, Ohio

Frederick H. Dechant
Consulting Engineer
Chairman of the Board, Frederick H. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Reservoirs, Pipelines, Hydraulic Works, Gas Plants
Phila.: Fidelity-Phila. Trust Bldg.
New York: 27 William St.

The Haller Testing Laboratories, Inc.
Testing and Inspecting of Construction Materials
342 2nd Avenue, New York 17, N. Y.
New York, N. Y. • Boston, Mass.
New Haven, Conn. • Plainfield, N. J.

NEW PRODUCTS



New Earth-Moving Machines Feature High Capacity and High Speed

Two new rubber-tired earth-moving machines have just been announced by Caterpillar. They are: a 4-wheel diesel tractor-wagon combination (composed of a DW20 tractor and W20 wagon); and a 2-wheel diesel prime mover (DW21) equipped with a No. 21 scraper. The DW20 will also be available with a No. 20 scraper and a No. 20S bulldozer. Both the DW20 and DW21 are powered by a 6-cyl Caterpillar diesel rated 275 hp at 2,000 rpm. The DW20 has five forward speeds (2.88 to 26.60 mph); and a reverse speed of 3.72 mph. Working speeds are controlled by a foot throttle. Overall length of tractor and wagon is 45 ft 8 in.; height is 10 ft 2 in. The W20 has a struck capacity of 17.0 yds; heaped of 25 yd. Doors are hydraulically controlled with a positive mechanical lock. The cable-controlled No. 20 scraper has a struck capacity of 15 yds; heaped of 19½ yd. Width for a non-stop turn of the tractor-wagon is 50 ft. The DW21 has five forward speeds (2.16 to 20.0 mph); a reverse speed of 2.79. Overall length of tractor-scraper combination is 40 ft 7 in.; width is 11 ft 6 in.; height is 10 ft 7 in. Positive hydraulic follow-up steering, 90 deg each way, is provided which permits a non-stop turn with scraper in 35 ft. The No. 21 scraper has a struck capacity of 15 yd; heaped of 19½ yd. Depth of cut is 9 ft 6 in. Struck capacity may be increased to 18 yd by using 12-in. sideboards. Approximate shipping weight of the combination is 47,500 lb. Both tractors are equipped with spring-mounted bucket-type seats that have upholstered cushions and backs. They are adjustable forward and back and have hydraulic snubbers. These new Caterpillar units offer the heavy construction contractor a complete equipment package specifically designed to meet his needs in each zone of operation.—Caterpillar Tractor Co., Peoria 5, Ill.

End-Discharge Tilting Mixer

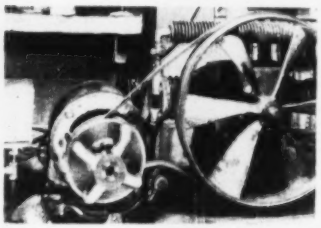
Lightweight 5½-S end-discharge tilting mixer weighs less than 800 lb. Loading height is 48 in. Mixing drum makes a complete revolution so that quick, thorough drainage of bowl can be accomplished after washing out. Mixer can be mounted on steel or pneumatic-tired wheels. Power is provided by a 2.5-hp Wisconsin engine.—Worthington Pump & Machinery Corp., Ransome Construction Equipment Sales Div., Dunellen, N. J.

Engine-Oil Changer

Vacuum-type engine oil changer completes oil changes in approximately 3 min. Vacuum is supplied by connection to the engine intake manifold. Oil is drawn out through a quick-coupling nozzle inserted in dip-stick opening. Engine is stopped by safety switch when drainage is completed.—The Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio.

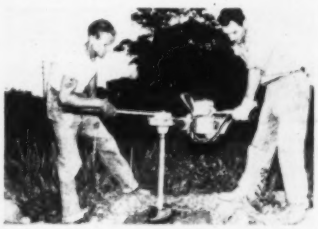
Wire-Rope Splicing Machine

Cable-slicing machine speeds opening of strands in wire rope, and the tightening of loose end strands during splicing. The Model 9 splicer is designed for ¼ and 1-in. rope, but can be used with ⅜-in. rope. A second pair of jaws increases capacity to 1¼ in. The Model 1 splicer covers the ⅛ to ⅜ in. range.—Quay Industries, 910 Seventeenth St., N. W., Washington 6, D. C.



Variable-Speed Clutch Pulley

Variable-speed clutch pulley is automatically controlled by engine speed, and makes possible infinite gear-ratio changes. The automatic clutch is centrifugally operated. Clutch allows for independent action of pulley belt by an intermediate ball bearing. During acceleration, pulley belt is picked up by the pulley with no wear on the belt.—The Driv-Way Lite Co., P. O. Box 2850, Denver, Colo.



Post-Hole Digger

Gasoline-powered post-hole digger can be quickly converted into a standard chain saw. Weight of the two-man drill, complete with 6-in. auger, is 79 lb. Full-swivel coupling permits auger to drill at any desired angle, and to reverse rotation, if desired. A cen-

(Continued on page 86)

GOW SOIL BORINGS

BY Raymond

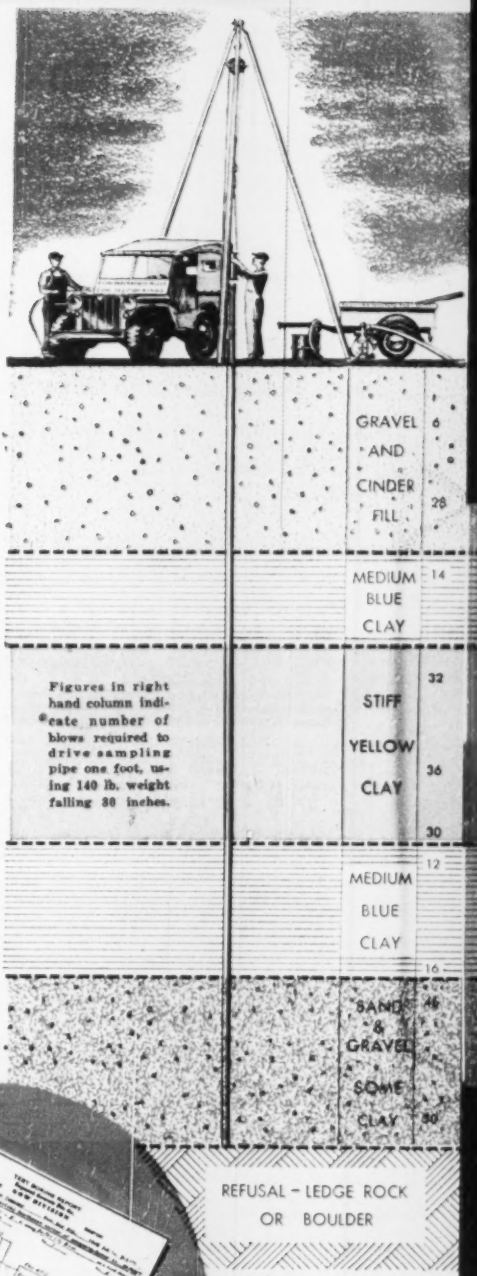
Carefully made soil investigations are of great value to Owners, Architects and Engineers in the selection of building sites and the determination of proper structural foundations.

Specify dependable Gow borings by Raymond and you will secure information that will supply the basis for sound engineering decisions.

Their low cost will surprise you.

• • •

THE SCOPE OF RAYMOND'S ACTIVITIES includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement mortar lining of pipes by the Centriline Corporation, a Raymond subsidiary.



GOW DIVISION

Raymond

CONCRETE PILE CO.

140 Cedar Street, New York 6, N. Y.

BRANCH OFFICES:

Boston • Syracuse • Philadelphia • Baltimore
Washington • Pittsburgh • Atlanta • Miami
Houston • Kansas City • St. Louis • Cleveland
Chicago • Detroit • Salt Lake City • Portland
San Francisco • Oakland • Los Angeles
and principal cities in Latin America

CAVE-IN HALTED WITH "GUNITE"

The soil around Allentown, Pennsylvania, is largely limestone. One night, a passing automobile's vibration caused an entire street intersection to cave in over an unsuspected cavity. Gas mains exploded and water lines ruptured. The surge of water from the broken mains ate dangerously into the surrounding soil. Nearby structures were in danger of collapsing. As soon as practicable, one of our crews began the application of reinforced GUNITE over exposed rock surfaces (see photo above) to prevent air slacking and further undermining of the surrounding area. Our knowledge of how to cope with this situation was gained through actual experience in the construction of water tunnels in New York City, Baltimore, Boston, Toronto, as well as in many coal mines.

A completely illustrated catalog describing hundreds of successful GUNITE jobs we have performed is yours for the asking. A request for Bulletin A2400 will bring you a free copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

DRILLING
ANYWHERE

We look into the earth

PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
Philadelphia 48, Pa.

ROYERSFORD
New York Office
44 Whitehall St., N. Y. 4, N. Y.

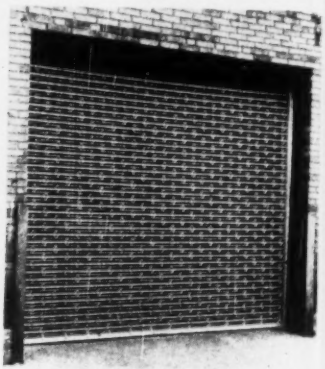
Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

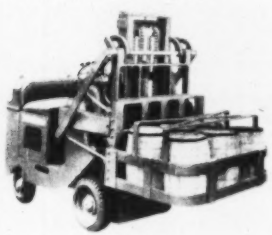
JOHN W. STANG CORPORATION
2 Broadway, New York 4, N. Y.
2123 S. 56th St., Omaha, Nebr.
8221 Atlantic Ave., P.O. Box 631, Bell, Cal

trifugal clutch automatically disengages the auger at idling speeds. Augers of 6, 9, and 12-in. dia. are available.—McCULLOCH MOTORS CORP., DEPT. MF, 6101 W. CENTURY BLVD., LOS ANGELES 45, CALIF.



Open-Grill Metal Door

Grillwork of Mecco door shuts out traffic without disturbing air flow or cutting off light and vision. Grilles are available with manual chain-and-gear hand crank, or for motor operation. Guides may be concealed. Available in sizes to meet various specifications. — MOLSCHE-EDWARDS CORRUGATING CO., COVINGTON, KY.



Keg-Handling Device

Materials handler picks up, transports, stacks, and unloads (without a pallet) six 200-lb kegs of spikes in a single maneuver. As guide frame is lowered over kegs, the unloader is retracted pulling kegs firmly against three rubber-covered shoes which project from the face of the carriage. Shoes and guide frame are detachable, permitting use of Model LT-44 Towmotor lift truck with standard forks.—TOWMOTOR CORP., 1226 E. 152ND ST., CLEVELAND 10, OHIO.

Heavy-Duty Exhaust Mufflers

Advantages claimed for the Donaldson exhaust mufflers are that they reduce smoke and fumes, lessen valve pounding, improve volumetric efficiency of engines, decrease fuel consumption, lower muffler jacket temperatures, and reduce cab panel drumming and vibration. Two types

(Continued on page 88)

here's service in TUBE-TURN

A distributor nearby carries a large stock of genuine TUBE-TURN welding fittings and flanges . . . in a wide range of types and sizes . . . to assure you prompt delivery for all your needs. Their experienced piping men will gladly help you in your piping problems...Call them for this complete service!

tt TUBE-TURN

tt and TUBE-TURN T.M.Reg.U.S.Pat. Off.

WELDING FITTINGS AND FLANGES

TUBE-TURN SEAMLESS WELDING FITTINGS—RANGE OF SIZES

Description	Standard Weight	Extra Strong	Schedule 160	Double Extra Strong	Light Gauge Nominal Pipe Size	Light Gauge Iron Pipe Size
ELBOWS 90° Long Radius	½"-30"	½"-30"	1"-12"	¼"-8"	4"-24"	⅜"-12"
90° Long Tangent	1½"-12"	1½"-12"	.....	.....	.....	.....
90° Reducing	2x¾" 6x2½"	2x¾" 6x2½"	.....	.....	.....	.....
90° Short Radius	1"-30"	1½"-30"	.....	.....	.....	.....
45° Long Radius	½"-30"	½"-30"	1"-12"	¼"-8"	4"-24"	⅜"-12"
RETURNS 180° Long Radius	½"-30"	½"-30"	1"-12"	2"-8"	4"-24"	⅜"-12"
180° Short Radius	1"-30"	1½"-30"	.....	.....	.....	.....
180° Ex. Long Radius	1"-2½"	1"-2½"	.....	.....	.....	.....
TEES—Straight	½"-24"	½"-24"	½"-12"	½"-8"	.....	.....
Reducing Outlet	½"-24"	½"-24"	¾"-12"	¾"-8"	.....	.....
REDUCERS Concentric & Eccentric	¾"x⅜" 24"x16"	¾"x⅜" 24"x16"	¾"x⅜" 12"x5"	¼"x½" 8"x3½"	.....	.....
CAPS	⅜"-24"	⅜"-24"	1"-12"	1"-8"	.....	.....
STUB ENDS—Lap Joint	½"-24"	½"-24"				
SADDLES	2"-24"*					
LATERALS—Straight	1"-24"	1"-24"				
Reducing	1"-24"	1"-24"				
CROSSES—Straight	⅜"-24"	⅜"-24"				
Reducing	⅜"-24"	⅜"-24"				
RINGS—Groove Type	⅜"-24"	1"-24"				
Ridge Type	⅜"-12"	⅜"-12"				
SLEEVES—Welding	2"-24"*					

Also available in certain sizes are: 90° long and short radius elbows; 45° long radius elbows and 180° long and short radius returns in Schedules 30, 40, 60 and 80; and 45°, 90° and 180° Super elbows and returns in Standard Weight and Extra Strong.

Tube-Turn welding fittings and flanges conform to applicable ASA and ASTM Standards.

*Since saddles and sleeves are used for external reinforcement only, they do not conform to iron pipe size thicknesses.

TUBE-TURN FORGED STEEL FLANGES—RANGE OF SIZES

	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.
WELDING NECK	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
SLIP-ON	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
LAP JOINT	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
THREADED	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-12"	½"-12"
BLIND	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
SOCKET TYPE	¼"-24"	¼"-4"		¼"-3½"			
REDUCING Threaded or slip-on	⅜"-24"	¾"-24"	⅜"-24†	¾"-24"	¾"-24"	¾"-24"	¾"-12"
ORIFICE—threaded		1"-24"	4"-12"	1"-12"	3"-12"	1"-12"	
ORIFICE—slip-on		1"-24"					
ORIFICE—welding neck		1"-24"	4-12"	1"-12"	3"-12"	1"-12"	

†Dimensions on sizes thru 3½" same as for 600 lb. flanges.
*Dimensions on sizes thru 2½" same as for 1500 lb. flanges.

TUBE TURNS, INC. LOUISVILLE 1, KENTUCKY

Manufacturers of a complete line of welding fittings and flanges

USF

Box Corrugated STEEL UTILITY BUILDING

Large or Small

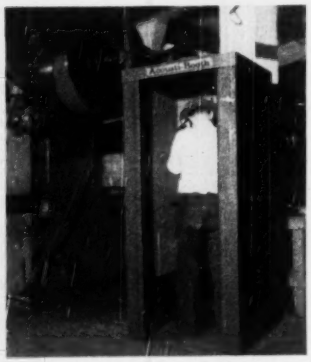
The USF all-steel Utility Building is your economical answer to either a portable or permanent structure at lowest cost. Frames are prefabricated and pre-fit formed steel that simply bolt together. Box corrugated steel roofing and siding sheets attach with clip-and-wedge fasteners. No special tools are needed, no field punching, welding or riveting. Manual erection is generally possible on all but long span trusses. Suitable for permanent use or readily dismantled and transported.

Sizes range from 10′ x 12′ floor plans to either 26′ or 30′ span widths in 10′ and 12′ clear heights for erection in multiple lengths of 13′-4.″ Full range of doors, fenestration, etc.

WRITE for complete data or quotation.

USF
United Steel Fabricators, Inc.
Wooster Ohio

are available—a vertical cab-mount, and an oval type for under-chassis installation. Both are designed for gasoline and diesel engines in the 150 to 300-hp range.—Donaldson Co., Inc., St. Paul, Minn.



Sound-Absorbing 'Phone Booth

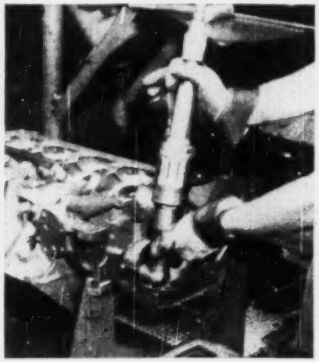
Doorless and sound-proofed Acousti-Booth is said to permit conversation without raising the voice, even in the noisiest spots. Recommended for use on construction jobs, the booths are available in two models—one is full-length; the other is a waist-high model. —Burgess-Manning Co., Libertyville, Ill.

Centrifugal Pumps

Design of the Motor-Mount centrifugal pumps permits use with any motor having an NEMA Type-C mounting flange. They are made in vertical and horizontal types, each type made in 25 standard sizes. Specifications are: capacities to 200 gpm; heads to 165 ft; motors, ½ to 7½ hp; speeds 1,750 and 3,500 rpm; maximum total pressure, 125 lb; maximum suction pressure, 50 lb; top liquid temperature, 200 deg. F.—The Deming Co., Salem, Ohio.

Lightweight Respirator Hood

Model 75 respirator hood provides protection against dust and paint-spray operations. It contains the R2000 respirator which uses seven types of cartridges for protection against a variety of dusts or gases. Hood design provides full and free movement of head and neck.—American Optical Co., Southbridge, Mass.

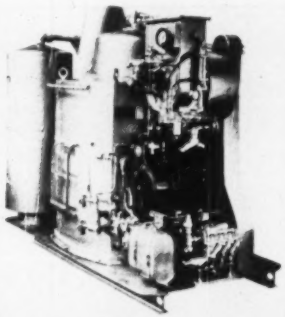


Angle-Type Nut Setter

High torque for setting medium-sized nuts is provided by the Keller angle-type nut setters. Small, compact angle attachments adapt the tools to fast work in close quarters. Tools are available with torques of 20, 30, 40, 60, and 70 ft-lb.—Keller Tool Co., Grand Haven, Mich.

Automatic Pump Control

Pressurefio device automatically controls pump operation when handling water, sewage, or other liquids. It consists of a flow-determining means, a pressure or level-sensing device, and a mechanism serving as the control function. The Pressurefio control may be used to start and stop pumps, to increase or decrease the speed of one or more pumps, to maintain a predetermined pressure at any point, or to automatically adjust pressure and flow. —Builders-Providence, Inc., 345 Harris Ave., Providence 1, R. I.



Steam Generator

Vapor steam generator supplies large quantities of high-pressure steam

(Continued on page 90)

OUR MIDDLEWEIGHT CHAMPS! THEY TIP THE SCALES AT 17,000 TO 25,000 GVW... MODELS HR--HG--HA--HRC

THESE MEDIUM-HEAVIES WIN BLUE RIBBONS IN THE 28,000 TO 34,000 GVW CLASS. MODELS YU--ZU--SU

OUR BIGGEST 4X4 BRUTES WEIGH IN AT 40,000 TO 44,000 GVW MODELS M-7 AND M-10

INTRODUCING THE LD! OUR POPULAR NEW OFFSPRING--THE ONLY *TRUE* LIGHT-DUTY 4X4! A 14,500 GVW WONDER BOY

BIG 6X6 BRUISERS! 30,000 TO 60,000 GVW MODELS M 6X6--H 6X6--MU6X6

Meet the whole family!

This line-up in our album covers the big FWD family of *basic* models. You should see the *other* pages... picture-after-picture of both highly specialized and conventional applications... plus photo-proof of economy, safety and spectacular performance... both on and off the highway. Put the *extra-traction* and *proper weight distribution* of this family of bread-winners to work for you, too! See your FWD distributor or write FWD.

THE FOUR-WHEEL-DRIVE AUTO CO. • Clintonville, Wisconsin

Canadian Factory: Kitchener, Ont.

World-Wide Sales and Service

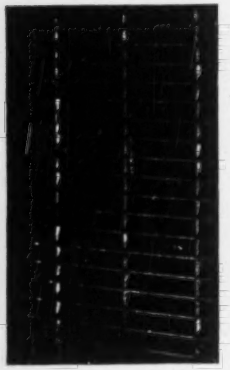
FWD

America's Foremost Heavy-Duty Truck

HENDRICK ALUMINUM GRATING

SAVES WEIGHT—

RESISTS CORROSION



Because it combines light weight, with ample strength and high corrosion-resistance, Hendrick Mitco Aluminum Grating is especially desirable for many purposes.

It is being successfully used in such widely different applications as shipboard installations and in sewage disposal plants.

Its light weight minimizes handling and erection costs, and maintenance painting is not required. Write for full information on this recent Hendrick development.

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

45 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

GRIFFIN

RIFFIN

WELLPOINT SYSTEMS

JETTING PUMPS

Distributors

GRIFFIN ENGINEERING CORP.
2016 E. Adams St.,
JACKSONVILLE, FLA.

GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54 N. Y.
Phone: Mitrose 5-7704-5-6

WELDING CONNECTORS

Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
Air Reduction Canada, Ltd. Montreal 2, Canada

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

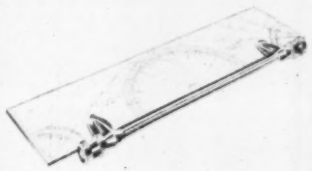
Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

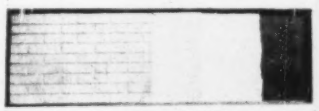
Scranton, Pa. Dept. E, U. S. A.

for short or sustained periods for pile-driving, asphalt plants, and similar uses. It develops 200 lb working-steam-pressure in two minutes from cold water and makes over 3,500 lb of steam an hour at 75 to 300-lb steam pressure, the manufacturer states. Once started, automatic controls turn the machine off when predetermined pressure is reached; start it again when pressure drops 15 lb. Power is supplied by a 5-hp motor or gas engine. Over-all dimensions are: 8 ft long, 4 ft wide, and 6½ ft high.—VAPOR HEATING CORP., 80 E. JACKSON BLVD., CHICAGO 4, ILL.



Universal Drafting Tool

Plastic drafting device serves as a straight-edge, T-square, triangle (all angles), protractor, parallel rule, and lettering guide. The instrument is self-contained and requires no attachments or board clamps. Feature of the instrument is the precision-ground roller which causes it to always roll in a straight line.—LOOMIS INDUSTRIES, 516 PARK WAY, PIEDMONT 11, CALIF.



Building Coating Material

Dura-Brick coating is recommended for new home construction or for remodeling. It provides a brick-like surface and is highly weather resistant. Application consists of three layers of the mixture applied over a covering of 15-lb rag felt base. The third coat, colored as desired is combed to simulate brick texture and is then lined off by a special knife so that the white undercoat shows through as mortar joints.—WISCONSIN DURA-BRICK CO., 4709 W. CENTER ST., MILWAUKEE 10, WIS.

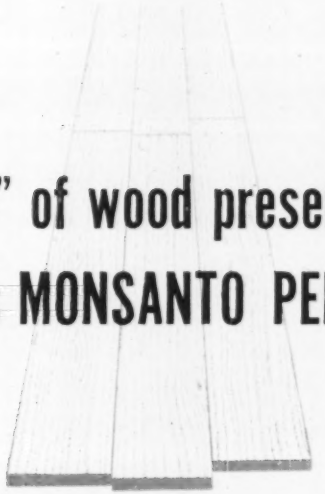
Hydraulic Pump-Valve Unit

Pumps in the B-101 series are designed for use in actuating dump units. They are recommended for intermittent use with operating pressures up to 1,500 psi. The B-101 is made in three sizes (1¼, 2, and 2¾ in.) and can be furnished without relief valve or with single or two-stage relief valve. Valve has raise, hold, and lower posi-

(Continued on page 93)

for "tough job" of wood preserving, utility chooses MONSANTO PENTAchlorophenol

(Santophen 20)



MONSANTO PENTA protects planks which guard workmen and cables at Union Electric Company of Missouri substation, near St. Louis.

There was a "tough job" for a wood preservative when Union Electric Company of Missouri built safety for workmen and protection for cables into its new substation at St. Louis. To accomplish this built-in protection, underground conduits were covered with heavy planks so that future workmen would not pierce cables accidentally. Obviously, to give *long-lasting* protection, the planks had to be treated with a *long-lasting* preservative. Monsanto PENTAchlorophenol was applied by pressure process at the rate of 10 pounds per cubic foot of wood.

Monsanto PENTA is a *chemically uniform* material. It *stays* in the wood . . . does not evaporate . . . isn't washed away by rain or ground water. Monsanto PENTA gives *positive protection* against termites and other wood-destroying insects . . . against rot organisms. With properly formulated PENTA treatment, wood can be painted or stained. It can be made water repellent.

If you use wood in any application in which long life of the material is desired, it will be worth your while to investigate Monsanto PENTA. For information, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-H South Second Street, St. Louis 4, Missouri.

Santophen: Reg. U. S. Pat. Off.

DISTRICT SALES OFFICES:

Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

MONSANTO
CHEMICALS for PLASTICS

MONSANTO CHEMICAL COMPANY
Organic Chemicals Division
1759-H South Second Street, St. Louis 4, Missouri

Please send information on Monsanto PENTA

Name ..... *Title* .....

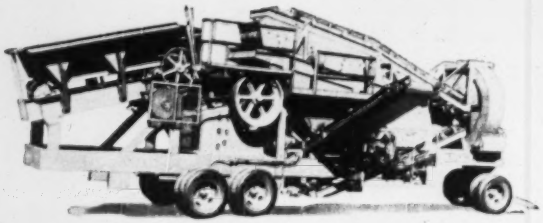
Company .....

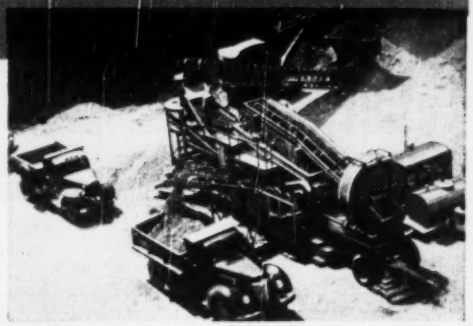
Street .....

City ..... *Zone* *State* .....

SERVING INDUSTRY . . . WHICH SERVES MANKIND

4 TOP PRODUCERS THAT INVITE COMPARISON



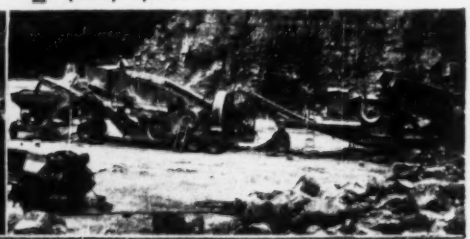


1 TwinDual Pacemaker Rock Plant

2 TwinDual Gravel King — three stages of crushing, two screens for pits with large boulders

3 TwinDual Master Gravel Plant—double the output of conventional two-stage plants of comparable size and weight

4 TwinDual Secondary with 546P Primary. High capacity with two portable units for quarry operation



UNIVERSAL'S TWINDUAL PLANTS FOR ROCK AND GRAVEL

Out in front! Universal TwinDual Plants are breaking production records and cutting costs per ton on finished aggregate.

Universal "Stream-Flo" engineering does it with the TwinDual Method — the modern system of crushing and screening that gives three full stages of reduction with only two crushers. You get more production, less jaw and roll shell wear, longer life, less maintenance.

Before you make an investment in a crushing, screening and loading plant for rock or gravel investigate the profitable bonus you get with a TwinDual installation. Compare TwinDual Plants with the field. Get the facts now.

How many crushers do you need for 3 full stages of reduction?

The TwinDual Method does it with two—
First Stage—Jaw Crusher
Second and Third Stages—TwinDual Rolls

UNIVERSAL ENGINEERING CORP. division of PETTIBONE MULLIKEN CORP.

633 C Ave. N. W., Cedar Rapids, Iowa
Phone 7105

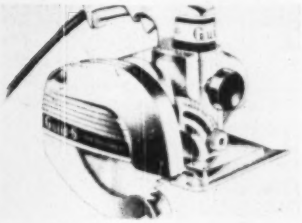
4700 W. Division St., Chicago 51, Illinois
Phone SP aulding 2-9300

PMCP

HAISS
NEW YORK, N. Y.

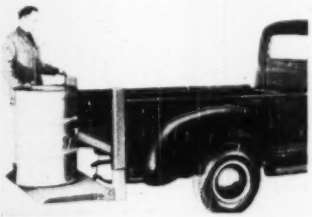
UNIVERSAL
CEDAR RAPIDS, IOWA.

tions. Two drive shafts provide connections to power-take-off shafts having either rotation.—The Commercial Shearing & Stamping Co., Youngstown, Ohio.



Powered Hand Saws

Improved Guild saws (Models A-6 and A-8) feature: Built-in calibrated angle-adjustment which permits accurate bevel cutting; and an instant depth control. The A-6 cuts a full 2 in. at 90 deg; the A-8 cuts 7/8 in. at 90 deg. Fan ventilating system keeps motor cool and the cutting line clear. Both saws are powered by 115-v ac-dc motors.—Porter-Cable Machine Co., 2504a N. Salina St., Syracuse 8, N. Y.



Hydraulic Tailgate Loader

Hydraulically powered tailgate loader for pickup trucks has a 1,000-lb capacity. Power is provided by a fan-belt-driven pump with its own self-contained clutch. Pump operates only when lifting power is needed. One control is used for raising, holding, or lowering. Safety by-pass valve prevents overloading the hydraulic system.—National Lift Co., Subs. Gar Wood Industries, Inc., Dept. 2039, 225 Madison St., Waukesha, Wis.

Spring-Making Machine

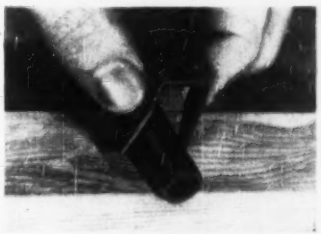
Drill-press attachment permits shop fabrication of springs of all types. These can be made with infinite variations in pitch, length, and size (within its range). Capacities include wire from 6 to 28 gage. Outside diameter of finished springs can be varied from 3/8 to 5 in. Special spindles are available for other sizes.—Cyclone Corp., 12 Newhall Ave., Saugus, Mass.

Gas, Diesel Engines

Design of three new engines permits their use with natural gas, butane, or diesel oil as fuel. They are built in three basic sizes having ratings of 22, 33, and 45 hp. These ratings are approximately the same regardless of fuel used. Applications of all three may be widely varied by use of accessory equipment.—Waukesha Motor Co., Waukesha, Wis.

Lightweight Aluminum Ladder

Dual-purpose aluminum ladder can be used as a 10-ft straight unit, or as a 6-ft step ladder. It weighs 15½ lb, and safely supports 600 lb. Non-skid pads are mounted on the flared rails to prevent slipping.—Original Products Co., P. O. Box 9155, Fort Worth 7, Texas.



Tube-Fastening Staple

Tube-Tite staple is designed for fastening copper or brass tubing used in radiant heating, and in hot and cold water service-line installation. Staples are copper with a steel core for strength. Sizes fit ¾, ½, or ¾-in. nominal tubing. Flat-top staples fit the first two sizes; a round-wire top fits the ¾ in.—E. H. Titchener & Co., 67 Clinton St., Binghamton, N. Y.

New Product Briefs

Welding products announced by The Lincoln Electric Co., Cleveland 1, Ohio, include a new welding cable, an insulated electrode holder, and a mild-steel E6012 electrode (Fleetweld 72). The cable features long life and maximum flexibility. The holder combines the advantages of both tong and hole-type holders. The electrode is recommended for high-speed production of single-pass fillet and lap welds in the flat or horizontal positions.

Grille for ventilating or air-conditioning systems imparts a turbulent action which minimizes drafts and produces rapid temperature equalization. Manufactured by: Barber-Colman Co., Rockford, Ill.

Tuf-Cote coating for safety lenses is now distributed by the Bausch & Lomb Optical Co., Rochester 2, N. Y. Tuf-Cote makes lenses more resistant to welding splatter and emery pitting.

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

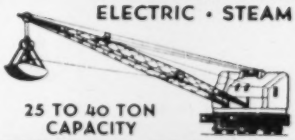
"ARMOURING"
TRADE MARK

THE ORIGINAL STEEL MESH
FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

• Catalog on Request

IRVING SUBWAY GRATING CO., INC.
5008 27th St., Long Island City 1, N. Y.
1808 Tenth St., Oakland 20, Calif.

OHIO
LOCOMOTIVE CRANES
GASOLINE • DIESEL
ELECTRIC • STEAM



25 TO 40 TON
CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

"GUNITE" CONCRETE
(Since 1915)

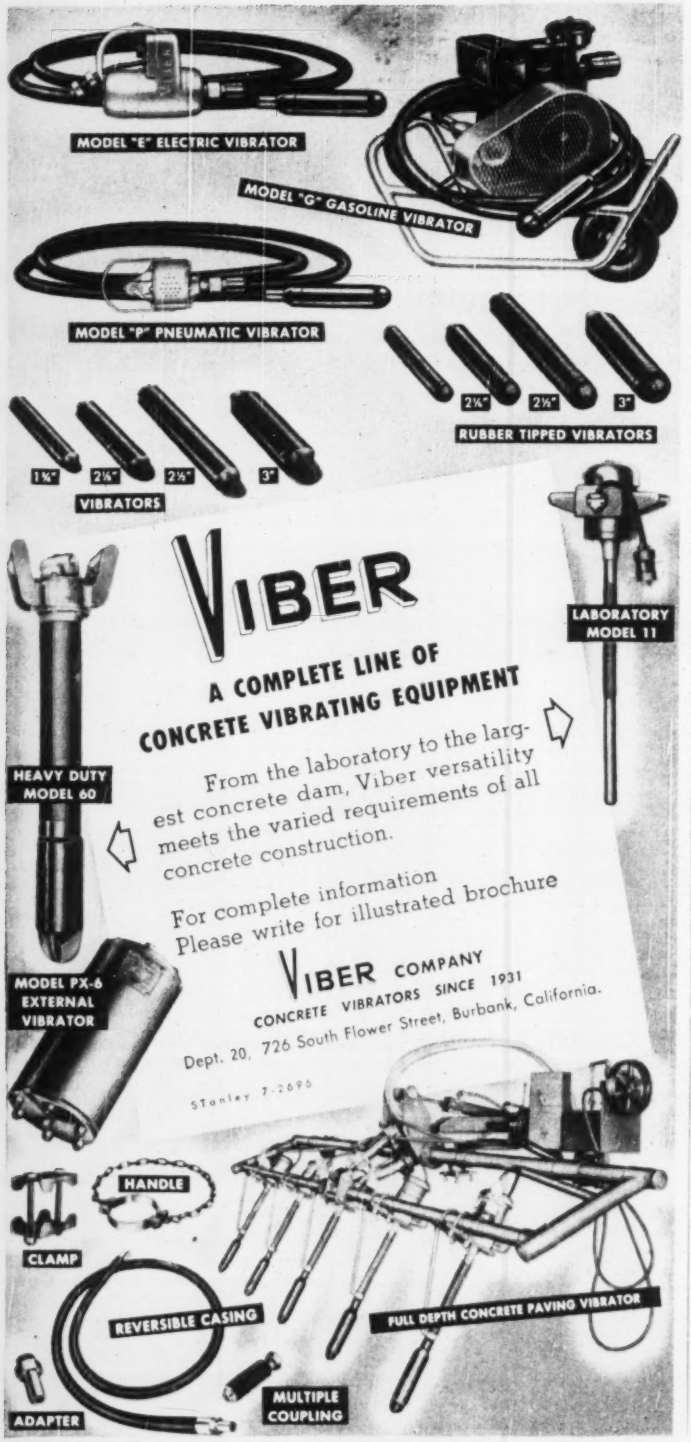
FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING, WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans
See our catalog in Sweet's



Manufacturers' Publications

Calcium Chloride for Roads—Interesting new booklet is entitled, "The Why of Wyandotte Calcium Chloride for Roads". It is primarily directed at state and county highway commissioners and engineers, township supervisors, and others concerned with good gravel roads. Questions such as gravel loss, blading costs, spring breakup, and stable bases for future surfacing are aptly discussed. This booklet also discusses circumstances where calcium chloride will not work.—WYANDOTTE CHEMICAL CORP., CALCIUM CHLORIDE DEPT. (ENR), MICHIGAN ALKALI DIV., WYANDOTTE, MICH.

Movie on Blasting—"Before the Blast" is a specialized safety film produced to aid in reduction of accidents and injuries in the construction industry. The film outlines numerous safety rules and suggestions, concerning storage, transportation, and use of high explosives. Running time of this 16-mm color-sound movie is 10 min.—AFFILIATED AETNA LIFE COMPANIES, PUBLIC EDUCATION DEPT., HARTFORD 15, CONN.

Clear Wood Preservative—Decaznot, a clear wood preservative, is featured in Catalog 501-WP. Also included in this catalog is information on C-4 black creosote; Coopersote brown creosote oil; Puresote, a light-brown extra-quality creosote; clear creosote shingle stain; black tree wound paint; and Exterm termite destroyer. The bulletin describes each product, lists its recommended uses, and describes methods of application.—COOPERS CREEK CHEMICAL CORP., WEST CONSHOHOCKEN, PA.

Concrete River Weights—Illustrated brochures describe the Universal concrete river weights. The first publication shows photos of actual use of weights to safeguard gas lines crossing the Tennessee river. Engineering specifications are listed. The second publication, a 12-p booklet, shows how precast concrete cribbing and bridge deck slabs combine to speed bridge construction and repair.—UNIVERSAL CONCRETE PIPE CO., 297 S. HIGH ST., COLUMBUS, OHIO.

Woven-Wire Slings—Specifications for a complete line of woven-wire slings are listed in this catalog. Slings listed are available in standard widths from 3 to 30 in. and from 36 to 132 in. in standard lengths. The catalog points

out that special sizes are fabricated on request, and lists the various metals and alloys in which the slings are produced.—The Cambridge Wire Cloth Co., Cambridge, Md.

Plastic Pipe—Literature describes outstanding features of plastic pipe including light weight and extreme flexibility. This type of pipe can be used for almost any purpose and is guaranteed against rot, rust, and electrolytic action. Data available describe typical uses and methods of handling plastic pipe.—Carlon Products Corp., 10153 Meech Ave., Cleveland 5, Ohio.

Rubber Products—Three new bulletins describe Hewitt-Rubber products. Bulletin 137 describes the Servall all-service hose for handling air, water, gasoline, oil, or mild chemicals for low-pressure spray requirements. Bulletin 129 describes the general-service Conservo air hose. Bulletin H-1 (8 pp) describes applications and comparative qualities of flexible rubber pipe.—Hewitt-Robins, Inc., Hewitt-Rubber Div., 240 Kensington Ave., Buffalo 5, N. Y.

Tungsten-Carbide Bits—Picture story presented in 20-p catalog shows how to successfully recondition tungsten-carbide bits. The booklet also contains helpful operating suggestions for drillers on how to obtain maximum speed and footage out of carbide bits.—Rock Bit Sales & Service Co., 2514 E. Cumberland St., Philadelphia 25, Pa.

Repair of Tractor Parts—Repair and rebuilding of worn tractor parts by welding are described in an informative folder. This folder explains the use of Manganal 11 to 13½% manganal-nickel steel products. This product is recommended for use on drive sprockets, idler wheels, track rollers, tractor grousers, and bulldozers. Manganal has a tensile strength up to 150,000 psi.—Stellz-Sickles Co., 134 Lafayette St., Newark 5, N. J.

Forming System—Booklet (8 pp) describes and illustrates latest development in Symons concrete-forming system. This consists of brace plates which can be furnished for use on 2x4 braces and later used as horizontal supports on scaffolds. Another innovation is a panel with steel cross members which is recommended to take care of heavy pouring, especially when a vibrator is used. Each of these and other features are described in this comprehensive booklet.—Symons Clamp & Mfg. Co., 4265 W. Diversey Ave., Chicago 39, Ill.

ADVERTISERS IN THIS ISSUE

Atlantic Steel Corp. 63
Atlas Powder Co. 45

Bay City Shovels, Inc. 60, 61
Belmont Iron Works 86
Berger & Sons, Inc., C. L. 2
Bethlehem Steel Company 53
Boston Woven Hose & Rubber Co. 16
Byers Co., A. M. ..... 2nd Cover

Cement Gun Company 86
Chapman Valve & Mfg. Co. 32
Chicago Pneumatic Tool Co. 50
Cities Service Companies 11
Complete Machinery & Equipment Co. .. 70
Continental Steel Corp. 58

Detroit Diesel Engine Div., General Motors Corp. 6

Electric Tamper & Equipment Co. 58
Eppinger & Russell Co. 70

Foster Co., L. B. 12
Four Wheel Drive Auto Co. 89

Goodyear Tire & Rubber Co. 1
Griffin Wellpoint Corp. 90
Gunite Concrete & Construction Co. 93
Gunite Construction Co. 66

Hayward Company 64
Hendrick Manufacturing Co. 90

Inland Steel Co. 18
International Harvester Co. 46
Irving Subway Grating Co. 93

Joy Mfg. Co. 13

Kerrigan Iron Works, Inc. 57
Kinnear Mfg. Co. 14
Krueper Co., H. J. 57

Lock Joint Pipe Co. 4

Master Builders Co. ..... 3rd Cover
McGraw-Hill Book Company 55
McKiernan-Terry Co. 70
Monsanto Chemical Co. 91
Mott Core Drilling Co. 66

Naylor Pipe Co. 69
Newport News Shipbuilding & Drydock Company 20
Northwest Engineering Co. 3

Ohio Locomotive Crane Co. 93

Pennsylvania Drilling Co. 86
Portland Cement Assn. 49
Posey Iron Works, Inc. 15
Pressure Concrete Company 58

Raymond Concrete Pile Corp. 85
Roebling's Sons Co., John A. 9
Ryerson & Sons, Inc., Jos. T. 66

Spencer, White & Prentis, Inc. 64
Sprague & Henwood, Inc. 90
Standard Oil of Calif. 8
Stang Corp., John W. 86

Texas Company ..... 4th Cover
Timken Roller Bearing Co. 5
Tinney Drilling Company 58
Trailer Village, Inc. 64
Truscon Steel Company 40
Tube Turns, Inc. 47, 87

Underpinning & Foundation Co. 63
U. S. Pipe & Foundry Co. 10
U. S. Steel Subsidiaries 22
United Steel Fabricators, Inc. 88
Universal Atlas Cement Co. 22
Universal Engineering Corp. 92
Universal Sewer Pipe Corp. 36

Vacuum Concrete, Inc. 64
Vibet Company 94
Vulcan Iron Works 59

Williams Co., J. H. 90
Wood & Co., R. D. 7

Professional Services 83

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 75, 76
Positions Wanted 76, 77
Part Time Work 77
Selling Opportunities Wanted 77
Employment Services 76

Special Services
Contract Work 77

Educational
Schools 77
Tutoring 77

Business Opportunities
Offered 77

Notices
Proposal 71-74

Equipment
(Used or Surplus New)
For Rent 82
For Sale 77-83
Piling 83
Pipe 83
Rail 83
Surveying Instruments 78

Wanted
Equipment 77

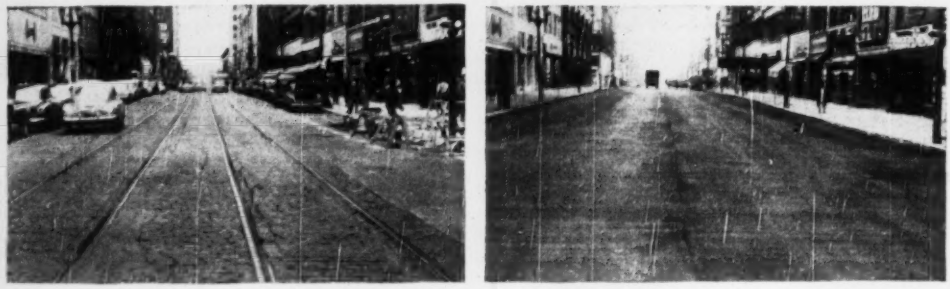
ADVERTISERS INDEX 74

ENGINEERING NEWS-RECORD

E. E. Wesseth, *Manager* — Howard T. Olsen, *Business Manager*

Sales Representatives: D. S. Robertson and E. A. Callahan, Jr., 330 W. 42nd St., *New York*; Fred G. Hudson, L. H. Hunt, W. G. Payne, 520 N. Michigan Ave., *Chicago*; J. W. Otterson, R. Portland, 68 Post St., *San Francisco*; A. R. Cozzens, 17th & Sansom Streets, *Philadelphia*; E. E. Duff, Jr., Hanna Bldg., *Cleveland*; B. F. Horn, Penobscot Bldg., *Detroit*; W. E. Donnell, Continental Bldg., *St. Louis*; H. L. Kreiter, 1111 Wilshire Blvd., *Los Angeles*; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta*; J. H. Allen, First National Bank Bldg., *Dallas*. *Other Sales Offices:* 738-39 Oliver Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston*; Aldwych House, *London*.

Letter from **KANSAS CITY**



Busy Walnut Street was resurfaced on Sunday: five-blocks in 11 hours. Before, (left) and after, (right) views show quite a change.

Three things are pointed to with pride today by civic leaders and the man on the sidewalk in Kansas City, Mo. They are:

1. The centennial celebration of the founding of that sprawling metropolis, incorporated in 1850 as the Town of Kansas, changed to the City of Kansas and subsequently to Kansas City.

2. Its million-dollar street-resurfacing program.

3. Its street-lighting system, completely modernized and well along toward completion.

From an engineering standpoint, the centennial meant plenty of work. Streets had to be gotten in shape to handle large volumes of traffic, and every available parking space had to be made ready.

• Big street-surfacing program—Taking advantage of an "open" spring, City Engineer John Maring launched his street rehabilitation and resurfacing program March 13. He completed over 10 mi of heavily-traveled, downtown streets by June 1, at a cost of $300,000—all by contract. The remaining 25 mi of the $1,000,000 resurfacing program will be finished by Sept. 1.

This rapid-fire resurfacing program, in turn, produced plenty of headaches for the traffic department, according to Tom Schurn, traffic engineer. Biggest job was to keep traffic moving.

Traffic interference was virtually eliminated, however, on one project by doing the job on Sunday, May 21. On that date, three local contractors—Midwest Precote Co., Matt Bowen Construction Co., and the Reno Construction Co.—teamed up to resurface ¾ mi of 45-ft wide Walnut Street between 8th and 13th streets. The job took 1,600 tons of asphaltic concrete and 11 hours to complete.

• Streets are brighter—Many centennial visitors found Kansas City's streets brighter than their own main streets. Relighting of all main traffic arteries will be completed this year: 144 mi of streets now have the latest in lighting, and 37 mi are under various stages of construction. Modernization of residential street-lighting stands at 97 mi completed, 72 mi under construction, the remaining 500 mi to be modernized during the next three years.

In addition to engineering problems linked with the centennial celebration, City Manager L. P. Cookingham and Public Works Director Reed McKinley have their share of worries not infrequently found in big city management. The greatest of these, until this year at least, has been deferred improvements due to lack of money.

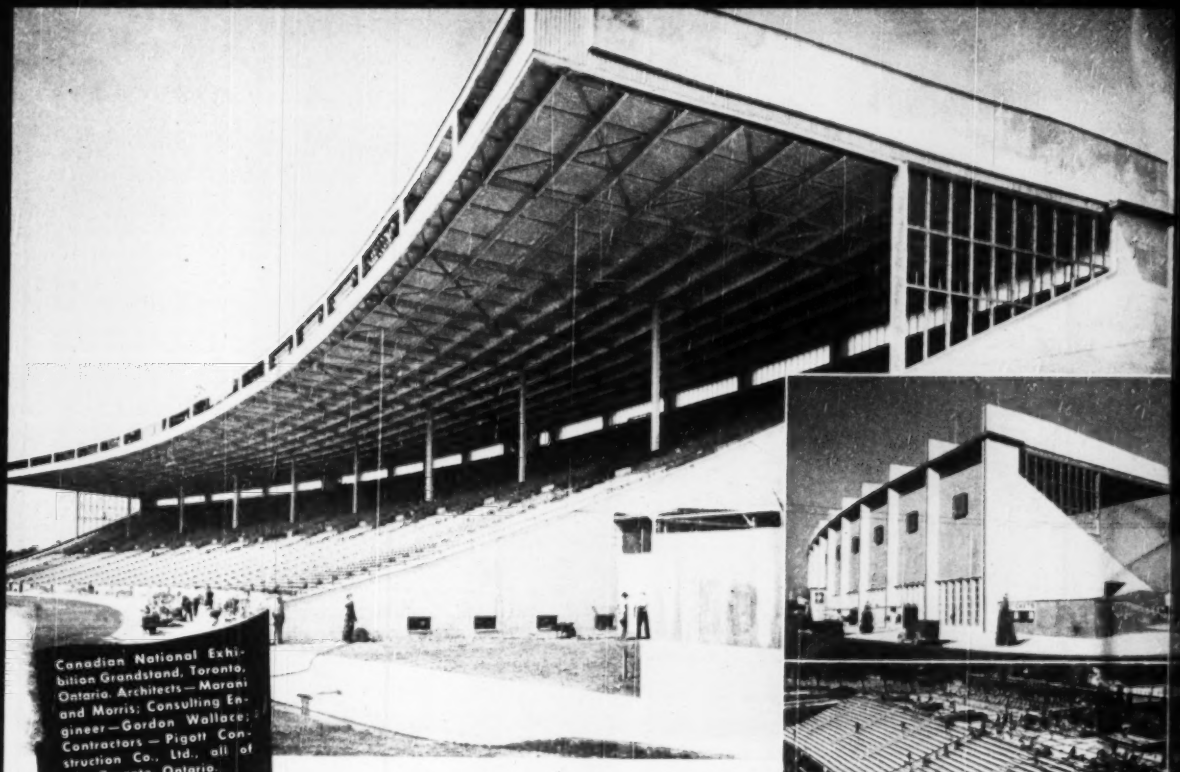
Although a $41,500,000 bond issue for public works improvements was approved by voters in 1947, it was held up by a two-year court fight over its constitutionality. Following a recent favorable decision by the State Supreme Court, the city sold two bond issues totaling $10,500,000 for this year's construction program.

Major items in this program, in addition to the street resurfacing, include: $1,300,000 for completion of the Southwest Trafficway; $1,-230,000 for the city's share of right-of-way on the Sixth Street Expressway; $1,600,000 for a new 7,000 x 200-ft runway, and other improvements at the municipal airport; $500,000 for street-widening to eliminate some bad bottlenecks; $500,000 for parks and playgrounds; a big sanitary sewer extension and two big storm relief sewers, totaling $500,000; viaduct, bridge and trafficway construction, costing $1,000,000; and $500,000 to complete the city's open-air theater in Swope Park.

• Plenty of water—Kansas City has plenty of good Missouri River water for its 440,000 residents. It has just completed 7½ mi of trunk main at a cost of $2,250,000, increasing its distribution system capacity by 30%. The city also sells water for supplying 135,000 people in outlying districts.

Melvin P. Hatcher, director of the waterworks department, has developed a price range to wholesale purchasers of water that is working out very satisfactorily. There are 28 metering stations, located near the city limits, serving the various purchasers, which net the city water department about $360,000 per year.

• Macy's started something—The observant centennial visitor will notice many physical improvements in Kansas City's civic, commercial and industrial construction: Macy's $7,000,000 remodeling and additional construction project at 10th and Main, last year, sparkplugged a widespread store-modernization program throughout the downtown area . . . the Corps of Engineers' new 9-mi levee, recently completed under the direction of District Engineer Paul D. Berrigan at a cost of $3,850,000 including 6 pumping stations to be completed this year, will permit development of a 4,000-acre industrial site . . . the $5,-000,000 Southwest Trafficway—a 25-yr dream, to be completed this year—will funnel high-speed traffic from the heart of the city, to a connection at 48th St. with U. S. Highway 50 leading east to St. Louis and west to Topeka and the Rockies . . . an integrated grid of one-way streets expedites traffic in the business area . . .



Canadian National Exhibition Grandstand, Toronto, Ontario. Architects—Marani and Morris; Consulting Engineer—Gordon Wallace; Contractors—Pigott Construction Co., Ltd., all of Toronto, Ontario.

Minimized SHRINKAGE, *Great* DURABILITY WITH POZZOLITH CONCRETE

Minimum volume change and long life under severe weather conditions were important concrete requirements to be met in the construction of this Canadian National Exhibition grandstand. Pozzolith, cement dispersion; widely used in building stadia*, provided these requirements and the following *plus* advantages:

- EASY PLACEABILITY
- ASSURED STRENGTH
- LOW PERMEABILITY
- GOOD APPEARANCE

Authoritative methods for concrete design, specification and production are ACI (613-44) and ASTM (C94-48)—both based on the water-cement ratio law. Pozzolith, also conforming with the water-cement ratio law, used with these methods produces the best, most economical results.

***Partial List of Stadia built with POZZOLITH CONCRETE**

University of Arizona Stadium
Tucson, Arizona

Orange Bowl, Miami, Fla.

Michigan State College Stadium
E. Lansing, Michigan

Stadium Addition
Collingswood, N. J.

Stadium, Tiffin, Ohio

Allentown School Stadium
Allentown, Pa.

Hershey Stadium
Hershey, Pa.

University of Texas Stadium
Austin, Texas

Cotton Bowl, Dallas, Texas

Stadium and Bull Ring
Sports City, Mexico

Stadium, Havana, Cuba

Jai Alai Sports Stadium
Manila, P. I.

the MASTER BUILDERS Co

CLEVELAND 3, OHIO — TORONTO, ONTARIO

Resilience–

–an important quality in pavements serving today's heavy traffic

The resilience of this Texaco Asphaltic Concrete pavement is an important reason for its durability under the heavy traffic of this Massachusetts street.

To cope with the increased volume and weight of today's traffic, a pavement needs every advantage engineers can give it.

One of the most important qualities a pavement can possess today is resilience, the ability to absorb impact. The heavier the impact, the more essential resilience becomes, if a pavement is to give lasting performance with minimum maintenance.

Construct resilient, heavy-duty Texaco Asphaltic Concrete or Texaco Sheet Asphalt paving wherever heavy traffic must be served. For important city streets, main highways or major airports, these shock-absorbing pavements are logical choices. Proof of their durability and economy under severe traffic conditions can be found throughout the country east of the Rockies.

For helpful information on Asphaltic Concrete, Sheet Asphalt and other plant-mixed types of asphalt paving, write our nearest office for the booklet, "Texaco Asphalt Paving — Plant-Mixed Types."

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 1

Boston 16 Chicago 1 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 1

TEXACO

REG. T. M.

TEXACO ASPHALT